

Ravalli NWR - Narrative Report - 1969

RAVALLI NATIONAL WILDLIFE REFUGE

Stevensville, Montana

NARRATIVE REPORT

1969

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U. S. Department of the Interior

Fish and Wildlife Service

Bureau of Sport Fisheries and Wildlife

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## RAVALLI NATIONAL WILDLIFE REFUGE

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### I. GENERAL

#### A. Weather Conditions

One of the heaviest snow years in some time occurred during the winter of 1968-69. Heavy snows late in 1968 continued into January of the new year with a storm that dumped 8-10 inches of new snow. Total accumulation on some areas was 20 inches. Periodic snow through the month of January accounted for the second highest precipitation total for any month of the year. The 3.35 inches recorded was 2.28 above the normal.

Periodic extreme cold spells were experienced during the winter period with below normal temperatures recorded on 20 days in March. Additional snow fell during March, however, most melted soon afterward. March mountain snow surveys in the valley area remained high with 42 inches (12.8" moisture) reported on Ambrose northeast of Stevensville.

Colder temperatures which were about 11 degrees below the 1968 averages for February and March ended in April with temperatures warmer than usual. Precipitation received in May and June was to represent the majority of summer moisture in 1969. A total of 4.29 inches was reported for June with over two inches received during the last week of the month. This rain was to be the last significant moisture for three months.

July and August weather was warm with an extreme heat wave hitting during the last part of August. Temperatures soared to between 90 and 100 degrees and lasted for well over a week. Precipitation for the two months amounted to only .24 inches and valley conditions generally remained parched until the first of October. During that time the first significant rain in over three months was enough to soak up the ground.

Cold temperatures prevailed throughout October with Missoula reporting the coldest October in 24 years and four new record lows during mid-month. Temperatures moderated in November and December with periodic cold spells occurring. Cold temperatures from November 16-20 resulted in most pools icing over for the first time and the first valley snow was recorded on the 16th.

November precipitation was very light with only .13 inches at Stevensville, and Missoula reporting the driest November since 1954. Mild December weather, highlighted by temperatures in the 50s during the first week, resulted in a complete lack of snow to start out the new year.



1969 WEATHER DATA -- STEVENSVILLE STATION

T e m p e r a t u r e s				Precip-	
				itation	Remarks
Month	High	Low	Ave.	Totals	
Jan.	46	-25	19.2	3.35	Precip. 2.28 above normal
Feb.	41	-6	22.4	.58	Precip. -.42
Mar.	62	-6	30.1	.14	Precip. -.69
Apr.	81	21	47.9	.68	Precip. -.10
May	82	20	54.1	2.05	Precip. .53 above normal
June	89	32	59.2	4.29	Precip. 2.56 above normal
July	91	39	63.2	.21	-.72 precip.
Aug.	100	32	64.8	.03	-.66 precip.
Sept.	90	25	55.6	1.16	Precip. .24 above normal
Oct.	70	15	40.1	.43	-.51 precip.
Nov.	59	7	33.2	.13	-.97 precip.
Dec.	35*	18*	26.5	1.04	

\*High and low averages instead of daily temperature.

B. Habitat Conditions

1. Water

Water conditions were generally good throughout 1969. Precipitation and runoff varied considerably during the year but water supplies to the refuge were ample for maintenance of pool levels and irrigation of grassland and cropland. With the completion of two small impoundments in 1969 there are now eight major and 14 minor pools capable of flooding between 700 and 800 acres.

One of the heaviest snow years occurred during the winter of 1968-69 and the flood threat was high throughout the valley. Fortunately, the spring thaw included a mixture of warm days and cold nights which prevented extensive flooding and damage to dikes and controls.

Water control efforts and resulting pool levels were conducive to both waterfowl production and production of aquatic foods. Irrigation water, although less than usual, was ample for good production of grain crops and improved upland cover.

Most refuge pools rose steadily through April, some cresting during the month of May, others in June. Frost-action and high water on Pool 2 washed out one of the two four-foot half-riser controls and necessitated the only major repair of water control facilities in 1969.

Water levels on the eight major impoundments (1, 2, 3, 4, 5, 6, 8, and 10) and two main diversion pools (Oxbow and Bass Creek) remained relatively stable after reaching their peak elevation. Spring and summer rains had very little effect on levels of refuge pools with only minor fluctuations occurring.

Despite the lack of rain from the first of July through the first of October, pool levels were maintained by ample irrigation water from three Supply Ditch Association supply ditches, and waste and seepage from private-land irrigation. Some water appears along the east river bench as seepage, other waste is collected and conveyed to the refuge in Middle and South Drains and Burnt Fork Creek.

The Bitterroot River provided sufficient water to the Bass Creek Diversion until late July when the ditch was cleaned and a small levee was dozed to divert additional water.

During the fall some pools were raised and/or lowered to increase waterfowl utilization and major fluctuations are recorded for those units. Termination of the irrigation season during the second week of October resulted in the gradual lowering of most major refuge pools. By mid November most were frozen with the only major open water occurring along the main channel of Spring Creek. Pool 8 was lowered considerably to increase the water area for waterfowl wintering on the refuge.

## 2. Food and Cover

Food and cover conditions were generally good throughout the year. The carry-over of grain crops and upland cover from the 1968 growing season was more than ample for most species utilizing the refuge during the winter of 1968-69. However, deep snows throughout most of January made most cover and 74 acres of standing grain unavailable.

The majority of the refuge deer herd moved to the foothills to escape the 16 to 20 inches of snow present on the valley floor during the early part of the year. The wintering waterfowl population, mostly mallards, also had difficulty since their main winter food supply was covered. Deep snow conditions forced ducks onto corn silage feed lots adjacent to the refuge and resulted in the only depredations complaint of the year. Upland game and song birds were also hard pressed during January.

Although extreme cold temperatures were prevalent through the rest of the winter, ground conditions opened up making cover and food supplies available. Utilization of agricultural lands increased as spring approached.

Nesting and fawning cover conditions were good early in the spring, and new growth of vegetation supplemented early cover for later nesting birds. Emergent brood cover was ample in most refuge pools; however, deficiencies existed in the northern portions of pools 1 through 5. Light growth of

emergents in the newly created pools 8 and 10 was supplemented by flooded brush and timber. Better distribution of emergents in most pools would be desirable and is anticipated as the marshes become better established.

It is felt that 1969 was a better than average berry and seed year based on the productivity of domestic fruits in the valley. Insect numbers, including aquatic invertebrates, were thought to be normal and survival of the young of most bird species was good.

Production of submerged aquatics was excellent in most refuge pools and provided an abundance of late summer and fall food for waterfowl. Pools 2 and 10 were particularly productive with unit 2 receiving the bulk of the pre-hunting season duck use. Pool 10 also received good use of flooded sedge and millet flats around pool margins when the level was increased in November.

Sharecropping on 293 acres of refuge agricultural land resulted in some of the best yields for grain crops since the refuge was established. A total of 43 acres (3480 bu.) of the refuge's one third share was left standing in the fields and 11 acres were harvested for banding and emergency feeding. Early winter use of the grain by waterfowl was light with the first utilization noted in mid December, but deer and pheasant were making heavy use throughout the last three months of the year.

Fall planted winter wheat on 63 acres was receiving good use by Canada geese in December, but light planting rates limited the amount of available browse. Future planning will provide for plantings specifically for goose browse.

Refuge agricultural crops were supplemented by large acreages of grain fields on private land east of the refuge. The relatively open early winter encouraged off-refuge feeding flights, particularly to the dry-land farm country in the foothills.

Food and cover conditions at the end of the reporting year were favorable for most resident wildlife species and the wintering waterfowl population. Generally upland cover conditions are excellent with some deficiencies in browse plants for the refuge deer herd.

## PART II. WILDLIFE

A. Migratory BirdsDucks

The wintering population of ducks during the first two and one-half months of the year fluctuated between 1,500 and 3,000 and resulted in fewer use-days than in 1968. Prolonged harsh winter conditions limited winter use until the third week of March when the spring peak of 8,325 was recorded. Even though the peak was comparable to last year, total use-days decreased 24.3%.

The mallard peak of 5,200 was comparable to the previous two years, but use-days were down about 125 thousand from the record of 419,300 in 1968. Spring-period mallard use represented 67.6 percent of the total duck use. Although represented by smaller numbers, canvasbacks and redheads showed the most significant increases in spring use.

By the middle of May the breeding population was stabilized except for the presence of migrating divers, particularly ruddy ducks. Summer duck use was comparable to last year with significant increases noted for widgeon and redheads, and slight decreases for mallards and wood ducks. The 326,340 duck use-days represents a new summer high for the refuge.

Habitat conditions were favorable for the production of ducks, however, a significant decrease occurred in 1969. An estimated 300 breeding pairs produced 1,100 ducks, 62 percent of last year's record of 1,780. Mallards and teal were the primary nesters with 41 percent of the total production by mallards. Even though fewer wood ducks were reported produced in 1969, their contribution was substantial and is expected to increase.

Production of divers showed little change from last year, but expected increases are likely to occur in the near future. Additional development and improved emergent cover in marshes will provide more attractive diver nesting habitat.

Fall duck populations remained relatively stable with a gradual increase until the last week of October. Fall numbers fluctuated after that depending on the weather and hunting pressure. The peak of 4,575 was reported during the fourth week of December and was only 52.1 percent of the record 1968 peak. Two other years in the refuge's five year history had a lower fall peak recorded.

Fall use-days decreased 187 thousand from last year's record of over a half-million. The decrease in use was attributed to the fair weather and abundance of grain in northern feeding areas of Canada. The mallard peak was less than half of the 9,000 present during the first week of December in 1968.

Use was down for most other species also, and significant decreases were reported for green-winged and blue-winged teal, ruddy ducks and canvasbacks. Fall canvasback use was negligible as use-days decreased from almost 3,600 to only 56 in 1969. Only two species, pintails and scaup showed increases in fall use over 1968.

Use of refuge habitat was good during all periods except late fall. Aquatic plants on refuge pools were the prime source of food well into the fall until duck use shifted to the dryland grain fields in the foothills east of the refuge. Off-refuge feeding flights continued throughout the remainder of the year with some use occurring in refuge grain fields in mid December.

For the third consecutive year annual duck use exceeded one million use-days. The 1,110,830 was the second highest reported, but represented a 21.4 percent decrease from last year. The decrease of over 300 thousand use-days was attributed largely to the harsh weather influence on the wintering population, and the fair weather influence on the fall migration. The year 1969 represented only the second time that the spring peak exceeded the fall peak.

Mallards, teal and widgeon again represented the majority of refuge duck use in 1969. Mallards contributed 60.1 percent of the annual duck use, and widgeon and all species of teal had over 100 thousand use-days each.

#### Geese

Goose use increased significantly during all reporting periods in 1969. Although the spring peak of 112 Canada geese was only 28 percent of the record peak in 1965, use-days almost equalled that of the record number reported that same year. Between 14 and 53 Canadas stayed during the critical winter period, later peaking during the second week of March. Weather conditions have much to do with the fluctuations that occur in refuge goose numbers during the wintering period.

The breeding population was established by the end of March with the usual non-breeders still present. The estimated 15 potential pairs raised about 50 goslings to flight stage in 1969; however, there is some speculation that some of the broods observed were actually hatched off the refuge. The production represents an increase of almost 68 percent over the previous year's record number.

Staging of Bitterroot Valley geese occurred on the refuge during the last week of August, but mysteriously disappeared afterward. High populations throughout the summer attributed to the almost 7,800 use-days for the period, more than triple that of any previous summer period.

Geese were essentially absent from the refuge until the second week of October when 90 were censused. Small family flocks were sighted during two weeks in the interim period between the August staging and the October arrivals.

Canada goose numbers gradually increased through November, jumped to over 200 the first week of December, and reached a record fall peak of 280 during the fourth week of December. The peak better than doubled the previous record set in mid December of 1968, and use-days were 345 percent of the total for the same period last year.

Use-days for Canada geese totaled 27,363 in 1969 and was almost triple that of previous highs in 1965 and 1968. Mild fall weather, off-refuge hunter pressure, and ample food contributed to the record fall, and total yearly goose use on the area.

The only significant use by other goose species occurred in late March and early April when a flock of snow and Ross' geese stopped on the refuge. The peak of 115 snows and 20 Ross' occurred during the first week of April, contributing to the nearly 2,000 use-days for those species in 1969.

General migrations of snow geese occurred over the refuge during the latter part of October but none stopped. One was reported killed on the refuge, but was undoubtedly a crippled or injured bird.

A single white-fronted goose was observed with Canada geese during the last week and a half of 1969.

#### Swans

Whistling swan use increased substantially over 1968 and the 2,030 use-days was the highest in the refuge's five year history. Good spring use, highlighted by a peak of 112 during the first week of April, contributed the majority of the use-days.

The first spring migrants arrived during the fourth week of March and a few were still present into the first week of May. The spring peak was short of the record 150 in 1967, but the prolonged use resulted in a record number 1,800 use-days.

The first fall migrant swan was observed on September 28, but not until late October was there any significant migration occurring. High flying flocks were observed at that time and eight birds stopped on the refuge on October 29. The fall peak occurred about a week later when 20 were utilizing Pool 2.

Swans spent considerable time in the open hunting area of the refuge and their almost complete lack of wariness resulted in at least five of the birds shot by "hunters."

#### Coots

Coot use increased in all but the fall reporting period as a record 389,130 use-days occurred during 1969, a 29 percent increase over last year. The peak of 2,500 occurred during the summer period when 248,500 use-days were recorded. Production was the same as last year when 400 young were produced.

#### Water and Marsh Birds

The most consistent water bird using the refuge was the great blue heron. Herons winter in the valley and considerable nesting occurs in a colony northwest of the refuge with much time spent feeding or roosting on the refuge.

Four species of grebes were reported (see NR-1A's) with pied-billed and eared grebes nesting on the refuge. An unusually late observation of a single pied-billed was made on December 27. Western grebes were present during a one month period beginning October 10.

Loons are not commonly observed but a single bird was sighted on April 19, spending but a few days on the refuge.

#### Shorebirds, Gulls and Terns

Details of observations and refuge populations of birds in this category are reported on NR-1A's. Late April marked the arrival of the first shorebirds common to the area with others following in early May. Of the species listed, Wilson's snipe and killdeer were represented during the winter and were the most common refuge nesters. Other abundant spring migrants included Wilson's phalarope which peaked at about 200, and dowitchers numbering about 150.

The fall migration of shorebirds was far from spectacular and the most common species were again snipe and killdeer. Yellowlegs, dowitchers, and sandpipers were present in reduced numbers. A small population of sora rails was present and some refuge production likely occurred from this secretive species.



Only a few observations were reported for gulls and terns on the refuge. Black terns were present late in May and Forster's tern, recently added to the refuge bird list, was reported in mid September. Occasional observations of gulls were made during the fall period, but the most unusual sighting was of a ring-billed gull on December 28.

#### Doves

No substantial changes in the morning dove population occurred during 1969. The first doves were observed on April 22 and by the middle of May the population had built up to its summer level of 150. Considerable nesting occurred but total production was undetermined. The September buildup reached a high of about 200 doves and by the end of October the majority were gone from the area.

A very unusual sighting of 20 doves was made on the December 27 Christmas Bird Count southeast of the refuge.

#### B. Upland Game Birds

The only resident upland game bird consistently using the refuge is the ring-necked pheasant. Valley and refuge populations have been decreasing annually. Refuge numbers ranged between 50 and 100 birds in 1969 depending on the season.

Excellent cover and food conditions on the refuge probably harbored one of the few moderate-density wild populations in the valley, but even then production was minimum. Only four broods were observed during the summer, mainly in the agricultural areas of the refuge.

The scattered valley population was supplemented prior to the hunting season by releases made by the Montana Fish and Game Department. Normally some are released on the refuge but State personnel feared poor return of birds put in good cover. Early winter conditions have been open and good carry-over of the 50-60 remaining pheasants is expected.

Hungarian (Gray) partridge made periodic use of the east refuge agricultural areas early in the winter. One of the few observations ever made occurred on the east boundary of tract 11 on December 14 when a flock of 13 was counted. Primary habitat for the partridge occurs on the benchland and foothills to the east of the refuge. Unfavorable cover or food conditions will occasionally force the birds down into the valley floor.

#### C. Big Game

White-tailed deer was the only big game animal that frequented the refuge during the past year. The population was estimated at 25 during the fall and represents a significant increase over the 16 reported in 1968.

Food and cover conditions were good and were reflected in the excellent fawn crop produced. Observations indicated that three sets of twins were raised in the total refuge production of eight. Three beautiful bucks, one five-point and two four-point, were commonly observed in the south refuge area.

Heaviest deer use occurred in tracts 10, 11 and 20 where good distribution of brush, timber and agricultural land attracted the majority of the refuge herd, particularly in the fall. As many as 14 deer were counted along the east bench area adjacent to pools 8 and 10 where they made their daily journeys to refuge grain fields.

No hunter harvest occurred in 1969, but two deer were killed by cars and one by poaching along the East Side Highway east of tract 27.

#### D. Fur Animals, Predators, Rodents and Other Mammals

Muskrat numbers remain low on refuge marsh areas in spite of favorable habitat conditions. The population is estimated at between 100 and 150, far below desired levels for good marsh management. Major refuge pools, oxbows and seepage areas below dikes harbor the majority of the muskrat population. Their activity in sedge seepage areas and cattail of open pools was very beneficial in opening up dense vegetative monotypes. Muskrat houses could also be very beneficial as goose nesting sites in the future.

No trapping was or will be allowed until the population builds up to desired levels.

Mink were also present in refuge marshes in low numbers. No trapping was permitted in 1969 because of only 40 mink present and the fear of accidental trapping of muskrats. However, this loss may be overshadowed by existing losses of rats as the mink's primary food source.

Beaver activity was noted near the Bass Creek Crossing area and in a marsh/oxbow complex of tract 27. The estimated population of six will remain protected until such time as major water facility problems are anticipated. Some minor plugging of water controls occurred in 1969; however, old and current beaver activity is still providing valuable waterfowl habitat in scattered locations throughout the refuge.

River otter were not observed in 1969 but sign of three animals was spotted in the snow on river overflow channels in the north portion of tract 27. It is felt that otter used the entire river bottom area along the west edge of the refuge at one time or another during the year.

Raccoon numbers remain low but populations are said to be on the increase in the valley. Actual observations of animals were infrequent but tracks left on mud flats and dikes were common. The population probably did not exceed 15-20 animals in 1969.

Striped skunks were the most abundant predator found on the refuge during the past year and removal was undertaken when the opportunity prevailed. About 15 of the refuge population of 60 were killed as potential nest predators.

On December 27, a Dr. Jellison had a study skin of a spotted skunk that was collected somewhere along the eastern foothills of the valley. He noted that it was only the second verified occurrence of the species in this area. None are thought to exist on the refuge.

Red fox numbers were relatively high during the spring period and five refuge dens were disrupted as a predator control measure. The estimated 20 fox that frequent the refuge provide ample opportunity for the visitor to observe the species. Refuge trapping requests have been declined since trapping on the boundaries is sufficient to keep the population at a desirable level.

Rodent numbers were high during the past year as evidenced by the burrowing sign in snow and matted vegetation. Foxes and predatory birds undoubtedly had an ample food supply.

Red squirrel, Columbian ground squirrel, yellow-bellied marmot, badger, and porcupine were all present on the refuge in varying numbers. Population estimates are reported on NR-4. At least two porcupines were removed as problem animals in 1969.

#### E. Hawks, Eagles, Owls, Crows, Ravens and Magpies

Predatory bird use in 1969 is best explained on NR-1A. The spring migration of hawks showed nothing unusual with marsh, sparrow and red-tailed hawks staying over to nest on the refuge. Rough-legged hawks were observed in each of the three reporting periods but none were thought to nest on the area.

During the fall migration increased numbers of the above species were observed at different times during the period. The only reported observation of a Swainson's hawk was made during the early part of November, and infrequent sightings of Cooper's and pigeon hawks were made in December.

Ospreys periodically visited the refuge throughout the year from their nest sites to the north of the refuge. It is felt that most of the observations were of one or two families that have summered in the valley during previous years.

Eagles, both bald and golden, were sighted only during the first four months of the year and a lone golden was again observed late in December. During the winter months the birds move up and down the valley, usually spending considerable time on the refuge waiting for the chance to single out weakened ducks.

Turkey vultures which are generally infrequently sighted in large numbers were well represented in 1969. Three were observed in late May, one late in August and on September 2 a total of seven were seen soaring over the south refuge area.

Owls were more often heard than seen during the year. Great-horned owls nested on the refuge in fair numbers, and short-eared owls were seen most commonly late in the year.

Crow numbers and periods of use changed very little from last year with the maximum population again reaching about 100 during the spring migration. Some nesting occurred on the refuge.

Ravens were observed in the fall as well as in the spring this year. Peak numbers probably never exceeded a dozen birds, and lesser numbers were still making periodic flights over the refuge at the close of the year.

Magpies showed no change in use this year with the peak again reaching a high of 200 in November. Considerable nesting occurred and 40 to 50 nests can easily be found scattered throughout the refuge. Control of these birds as potential duck and pheasant nest predators was discontinued last year; however, predation undoubtedly occurred. The extent of losses can only be speculated.

#### F. Other Birds

The refuge list of other birds is still growing for this relatively new area and local ornithological groups are doing much to add to the list which already includes 163 species. A total of fifteen new observed species need to be added to the present list, and some major revisions are necessary to the abundance classifications. One of the species, the pigmy nuthatch, was again observed this spring.

No highly unusual concentrations occurred and "other bird" activity was considered normal. Local bird watchers set a new valley record for their spring bird count by sighting 109 different species compared to last year's total of 102. A good share of the species were observed on the refuge. A total of 57 species and 6680 total birds were observed on the group's Christmas Bird Count in December, again the refuge providing the majority of species and numbers.

See the attached list, with new species added, for a complete refuge listing.

# BIRDS OF THE RAVALLI NATIONAL WILDLIFE REFUGE



Ravalli National Wildlife Refuge was established in December 1963. Proposed boundaries will encompass about 2,800 acres. The area is located in the intermountain Bitterroot Valley of western Montana near the town of Stevensville.

Elevation of the refuge is approximately 3,300 feet above sea level. It is primarily river bottom land, formerly used for agricultural purposes.

Habitats include timbered patches of third growth ponderosa pine, cottonwood and its brush associates, wet meadows, and marshes, and some upland and agricultural lands. Soils are shallow. Sand and gravel deposits are common. Though the primary responsibility of the refuge is waterfowl management, a wide assortment of other bird life also uses the area. All bird life has consideration in development plans.

Surrounding timbered mountains, brushy and grassland foothills, and the Bitterroot River and its many tributaries, all contribute to the great variety of birds seen on this small refuge at various times. The relatively mild weather of this inland valley affects bird migration through the region.

Initial refuge development not only has attracted waterfowl, but numerous shore birds as well. Additional development will increase this attraction. Large concentrations of birds cannot be expected on a refuge of this size. However, the great and interesting variety of bird life is very rewarding to the visitor. Wood ducks and hooded mergansers nest in the river bottom woodlands; mallards and teal nest in the marsh; assorted warblers and related forms are common in the brush types; mountain bluebirds, rufous hummingbirds, evening grosbeaks, and Lewis' woodpeckers can be viewed in their respective proper habitat and season. The great blue heron is seen commonly and a lucky observer might see a majestic golden eagle or a relatively rare osprey.

The following list contains 163 species. It has been compiled from refuge personnel's observations since the establishment of the refuge, as well as contributed observations of qualified members of the local Stevensville bird watching group. The list is in accordance with the Fifth (1957) A.O.U. Check-list.



UNITED STATES DEPARTMENT OF THE INTERIOR  
FISH AND WILDLIFE SERVICE  
BUREAU OF SPORT FISHERIES AND WILDLIFE





Season  
 S - March-May  
 S - June-August  
 F - September-November  
 W - December-February

Abundance  
 a - abundant  
 c - common  
 u - uncommon  
 o - occasional  
 r - rare

\*Nests on refuge

	<u>S</u>	<u>S</u>	<u>F</u>	<u>W</u>		<u>S</u>	<u>S</u>	<u>F</u>	<u>W</u>
Horned Grebe			r		Marsh Hawk	u	u	u	o
Eared Grebe	o		o		Osprey	o	o	o	
Western Grebe	r				Prairie Falcon	r			
Pied-billed Grebe	o		r		Peregrine Falcon	r			
*Great Blue Heron	c	c	c	c	Pigeon Hawk	o		o	
Black-crowned Night Heron	r				*Sparrow Hawk	c	c	c	u
American Bittern	r				*Ruffed Grouse	r	r	r	r
Whistling Swan	r		r		*Ring-necked Pheasant	u	u	u	u
*Canada Goose	u	u	u	u	*Gray Partridge	r	r	r	r
Snow Goose	r		r		*Virginia Rail	o	o	o	
Ross' Goose			r		Sora Rail	r	r	r	
*Mallard	a	a	a	a	*American Coot	c	u	a	c
*Gadwall	c	c	c	c	*Killdeer	c	c	a	o
Pintail	c	u	c	u	*Common Snipe	c	c	c	u
*Green-winged Teal	c	c	c	o	Spotted Sandpiper	o	o	o	
*Blue-winged Teal	c	c	c		Solitary Sandpiper	o		o	
*Cinnamon Teal	c	c	c		Greater Yellowlegs			u	
*American Widgeon	c	c	c	c	Lesser Yellowlegs			u	
Shoveler	u		u		Least Sandpiper			o	
*Wood Duck	c	c	c		Long-billed Dowitcher	o		u	
Redhead	o		o		Semipalmated Sandpiper			u	
Ring-necked Duck	r		o		Western Sandpiper	o		u	
Canvasback	r		r		Sanderling			r	
Lesser Scaup	o		o		American Avocet	o		o	
Common Goldeneye	o		o		*Wilson's Phalarope	c	u	u	
Barrow's Goldeneye	r		o		Northern Phalarope	c		u	
Bufflehead	o	o	o	o	California Gull	o	r	o	
Ruddy Duck			c		Ring-billed Gull	o	r	o	
*Hooded Merganser	o	u	u		Common Tern	r			
*Common Merganser	o	o	o	o	Black Tern	r		o	
Red-breasted Merganser	o	r	o	o	Rock Dove	u	u	u	u
Goshawk	o		o	o	*Mourning Dove	c	o	c	
Sharp-shinned Hawk	o		o	o	*Great Horned Owl	u	u	u	u
Cooper's Hawk	o		o	o	Pygmy Owl	r			
*Red-tailed Hawk	c	c	c	c	Short-eared Owl	o		o	o
Swainson's Hawk	c	o	c		Saw-whet Owl	r			
Rough-legged Hawk	o		o	o	Common Nighthawk	u	u	u	
Ferruginous Hawk	o		o		Vaux's Swift	o	o		
Golden Eagle	o	o	o	o	White-throated Swift	o	o		
Bald Eagle	r	r	r		Broad-tailed Hummingbird	r	r	r	

	<u>S</u>	<u>S</u>	<u>F</u>	<u>W</u>
*Rufous Hummingbird	o	u	u	
Calliope Hummingbird		r		
Belted Kingfisher	o	o	o	o
*Red-shafted Flicker	c	c	c	u
Pileated Woodpecker	o	o	o	o
*Lewis' Woodpecker	u	u		
Yellow-bellied Sapsucker	o	o	o	
*Hairy Woodpecker	u	c	u	u
*Downy Woodpecker	u	c	u	u
*Eastern Kingbird	u	c		
Western Kingbird	o	o		
Western Wood Pewee	o	c		
Horned Lark	u		u	
*Violet-green Swallow	c	u	u	
*Tree Swallow	c	c	c	
*Bank Swallow	u	u	u	
*Rough-winged Swallow	c	c		
Cliff Swallow	o			
*Barn Swallow	c	c	c	
Steller's Jay			o	o
*Black-billed Magpie	c	c	c	c
Common Raven	r		o	
Common Crow	c	u	c	o
Clark's Nutcracker			o	o
*Black-capped Chickadee	c	u	c	c
Mountain Chickadee	o		o	o
*White-breasted Nuthatch	c	c	c	c
*Red-breasted Nuthatch	c	c	u	o
Dipper				r
*House Wren	o	o	o	
Long-billed Marsh Wren	o		o	
Catbird		o	o	
*Robin	c	c	c	o
Varied Thrush	r			
Western Bluebird	r		r	
*Mountain Bluebird	u	u	u	
Townsend's Solitaire	o		r	
Ruby-crowned Kinglet	u	r	o	
Water Pipit			u	
Bohemian Waxwing			o	u
Cedar Waxwing			o	u
Northern Shrike	o		o	o
*Starling	a	a	a	c
Red-eyed Vireo	o	o		
Yellow Warbler	c	c	o	
Myrtle Warbler	o			
*Audubon's Warbler	c	c	u	
MacGillivray's Warbler	o	o		
*Yellowthroat	c	c		
Wilson's Warbler	u		o	

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	<u>S</u>	<u>S</u>	<u>F</u>	<u>W</u>
*House Sparrow	c	c	c	c
Bobolink	u	u		
*Western Meadowlark	a	a	c	o
*Yellow-headed Blackbird	u	u	o	
*Red-winged Blackbird	c	c	c	o
*Bullock's Oriole	o	o	o	
*Brewer's Blackbird	u	c	c	o
Brown-headed Cowbird	o	u	u	
Western Tanager	o	u	o	
Lazuli Bunting	r			
*Evening Grosbeak	u	o	o	u
Cassin's Finch	u		o	
Common Redpoll				o
Pine Siskin	o		o	o
*American Goldfinch	o	o	o	o
Red Crossbill				r
Rufous-sided Towhee	r			
Vesper Sparrow	o			
Lark Sparrow	o			
*Oregon Junco	c	o	c	c
Tree Sparrow	o		o	o
Chipping Sparrow	o	o	o	
White-crowned Sparrow	o	r	o	o
Fox Sparrow	o	o	o	u
Song Sparrow	u	u	o	r
Snow Bunting			o	o

The following seven species are rare or accidental visitors and have been recorded only once or twice:

Red-necked Grebe  
Turkey Vulture  
Snowy Owl  
Turkey  
Black-billed Cuckoo  
Pinyon Jay  
Pine Grosbeak

#### New Species Added

Blue jay  
White pelican  
Pygmy nuthatch  
Warbling vireo  
Forster's tern  
Bonaparte gull  
Western flycatcher  
American redstart  
Dunlin (Red-backed sandpiper)  
Ferrigenous owl  
House finch  
Semi-palmated plover  
Baird's sandpiper  
Northern waterthrush  
Savannah sparrow



#### G. Fish

Impounded refuge waters have been extremely productive for fair numbers of brook trout and trophy size brown trout. The majority of the fish were commonly observed below water controls or in pools 4-6, 8 and 10. It is estimated that some of the brown trout may be in the ten pound size class.

As one can understand, these fish are a source of frustration for hunters using the refuge. The Montana Fish and Game office in Missoula has been contacted regarding the netting and transfer of these fish to waters where they may be caught, but very little interest has been shown. Unlimited fishing is not compatible with other refuge priorities.

Whitefish and suckers are also present in some refuge pools and river oxbows, and all of the above mentioned fish plus rainbow and cutthroat trout are present in the Bitterroot River which forms the west boundary of the refuge. The Bitterroot is open to public fishing through access in the southwest portion of the refuge or from the opposite bank of the river.

#### H. Reptiles and Amphibians

Very little information has been recorded for these species in the past. A future list of species encountered in the field will be maintained.

#### I. Diseases

No wildlife diseases were encountered on the refuge in 1969 and none were reported in the valley area.

### III. REFUGE DEVELOPMENT AND MAINTENANCE

#### A. Physical Development

##### Buildings

Refuge buildings received normal maintenance required to keep them in good working order, but no major efforts were involved. Significant activities involving buildings included:

- Tarring and repair of granaries
- Alterations to work center pump and pumphouse
- Painting of Q-2 kitchen cupboards, and basement floor
- Painting of Q-1 garage doors and trim
- Replacement of portion of Q-1 sewer line
- Alteration and painting of picnic area outhouses

Considerable planning was involved in the proposed remodeling of Q-2 to add two bedrooms within an adjoining garage. Presently the house is a one bedroom facility.

##### Equipment

The refuge complement of equipment required the usual amount of minor maintenance; however, these major items are noted:

- Radiator repair on TD-114 dozer
- Overhaul and major repair to D-7 dozer
- Light motor overhaul on road grader
- Painting of road grader
- Rigging of spray tank as firefighting outfit

##### Water Facilities and Roads

Maintenance activity on six miles of dike, nearly 10 miles of dike access and gravelled road, more than 30 water controls, and over 20 miles of fence and boundary posting demanded considerable effort. Additional time was required to clean out and maintain irrigation ditches which provide water supplies to 305 acres of cropland and grassland.

Water damage necessitated emergency repairs periodically throughout the year. Major activity included:

- Riprapped culvert at Burnt Fork Diversion
- Riprapped eroded area at Bass Creek Crossing
- Rebuilt small portion of Pool 6 dike
- Repair to a portion of Pool 2 dike and re-installation of a 4' culvert

New physical development included:

Levee west of Pool 10 for protection from Bitterroot River water  
 Hauling of 3500 yards of fill for rehabilitation of Pool 8 dike  
 2100 feet (6500 cu. yds.) of dike, and control on Tract 21  
 pool (Unit 2a)  
 Low level dike for water spreading in SE Tract 21  
 About 1,000 feet of dike for east Tract 13 pool  
 Racks for water control stop-logs  
 Pumphouse on Spud Cellar Pond for irrigation of 20 acres  
 of cropland

#### Other

The take-over of tract 27 in the north portion of the refuge completed the last major acquisition for Ravalli. About two and one-half miles of the boundary was fenced and/or posted in 1969, and considerable effort was involved in cleanup activities.

Other fencing activity included the removal of obsolete fence from several older tracts in preparation for a systematic refuge fencing system.

#### B. Plantings

All agricultural plantings in 1969 were made by two cooperative farmers. The cooperators worked a total of 293 acres, planting and/or harvesting 93 acres of barley and 70 acres of wheat, fall planting 63 acres to winter wheat, and fallowing 30 acres.

A 37 acre alfalfa planting on tract 20 was in the second year of a three year cycle in a grain/hay rotation.

Under terms of the cooperative agreements, one third of the grain crop is to be left standing in the fields; however, a total of 11 acres (720 bushels) was harvested in light waterfowl-use areas. The balance of the refuge share was left standing in alternate strips. Yield from the 43 acres was estimated at 3480 bushels with 21 acres of Gaines winter wheat yielding considerably better than the 22 acres of barley. Harvested cooperators share was estimated at 8,630 bushels.

Grain yields were high with some small fields of wheat producing up to 120 bushel per acre. Wheat averaged 100 bushel per acre with barley averaging about 63 bushel. Field grain was not utilized by waterfowl until December 15, but even then use was not heavy.

Deer and pheasant use was excellent throughout the fall and it is expected that remaining grain supplies will be ample for the wintering duck population.

A total of 93 acres of cropland was summer fallowed for weed control with 63 acres planted to winter wheat in the fall. Germination of the plantings was good and some goose use was realized in spite of the light seeding rate and lateness of planting. Fall planting of wheat has been primarily for the seed crop the following summer; however, future plantings are planned specifically for goose browse. Earlier plantings and heavy seeding rates will contribute greatly to fall refuge goose-use since little use is made of grain fields.

High productivity of the refuge agricultural units was attributed to proper fertilization, chemical weed control for annual mustards, and irrigation. A total of 135 acres was either flood or sprinkler irrigated with the balance sub-irrigated from seepage from refuge pools and private land east of the refuge.

No new non-agricultural plantings were made in 1969 but woody cover plantings made in previous years received careful attention. Russian olive, Honeysuckle and Caragan seedlings were planted in four areas for upland game and songbird habitat. Cultivation and watering during the past year helped to further establish the plantings and survival is estimated between 75 and 80 percent.

Additional areas will be planted where irrigation water is available to insure survival.

The only other planting in 1969 involved the seeding of new dikes or levees. Timothy and white-dutch clover was seeded on a relatively small acreage to stabilize slopes. Germination has been poor and attempts are being made to secure drier-site grasses for such purposes.

#### C. Collections and Receipts

Nothing to report for the year.

#### D. Control of Vegetation

Most vegetative control during 1969 was by chemical means. Limited mechanical control involved the use of the TD-114 dozer on water cress on about 200 feet of the South Drain.

Sharecroppers used 2,4-D (PGBEE) at .25 per pound per acre on 163 acres of barley and wheat for mustard and thistle control. Although this light application was 95-100 percent effective for mustards, it did little more than slow the growth of thistles. Use of the chemical on croplands in tracts 10, 11, 19, 20 and 21 had much to do with the near record yields of grain crops.

The County Weed Control Board was contracted to complete the only other chemical spraying on the refuge. About 37 acres of grassland and road and dike berms were sprayed with 2,4-D (DMS) at a rate of about three pounds per acre for knapweed and thistle control. Application on 28 acres of grazing unit G-19 was at the expense of the Forest Service which has a free-use permit for the grazing privileges. Spot treatment of this unit was 50-75 percent effective and has done much to improve cover conditions.

Heavy infestations of thistle occur in scattered patches and on dike and road sides throughout the refuge. The heavy density of stands sprayed in 1969 prevented complete coverage and limited the kill to 60-75 percent on nine acres sprayed. Although thistles provide good wildlife cover increasing control efforts will be necessary to protect adjacent landowners from recurring infestations. The Weed Control Board is new in Ravalli County and the refuge should keep pace with it in its weed control efforts.

#### E. Planned Burning

No major controlled burning was undertaken during the year. Burning was limited to the cleanout of irrigation supply ditches, and removal of brush and debris from cleanup activities throughout the refuge.

Future burning is anticipated for encouraging deer and goose browse, and for improving upland nesting cover.

#### F. Fires

No uncontrolled fires occurred on the refuge in 1969 in spite of an extremely dry three-month period (July-September) in which all burning permits were ceased.

#### IV. RESOURCE MANAGEMENT

##### A. Grazing

Six permittees grazed a total of 205 head of stock on the refuge in 1969. Total revenue from the 802 AUM's utilized amounted to \$2,405.37. One permit was a free-use permit issued to the U. S. Forest Service, Stevensville, for grazing up to 14 head of horses and mules used in their operation.

The grazing season started either on the 15th or 24th of May and ended in the middle of October, with the exception of G-25 which ended November 30. Some extensions were granted where AUM allotments were not utilized, and permittee problems existed and forage was available.

Weather conditions were good for forage growth this year and for the most part cover conditions were excellent after the grazing season. Unit 25, grazed by Moody, was cropped too close and some adjustments will be necessary for the next grazing season. Units 10 and 11 (McElhaney) were grazed very light in spite of added use by Hagen's cattle when Unit 12 forage was in short supply. A slight increase in AUM's is anticipated in 10 and 11, but similar cover conditions will be maintained since these units provide valuable nesting habitat adjacent to Pool 10.

Eleven head of horses were grazed on the remaining two smaller units and stocking was well below carrying capacities. The Forest Service has improved forage and cover conditions on the 80 acre unit 19 through limited grazing and chemical weed control. The Service also constructed a new corral at the southern end of the unit to expedite handling of the stock used in their work.

The addition of tract 27 to refuge ownership will make some additional pasture land available; however, significant changes are not anticipated in the overall grazing program. Future development will reduce the total available acreage and some alteration of existing units will be necessary.

##### B. Haying

Under permit 43-69, farming cooperator Robert McElhaney harvested 94 tons of alfalfa hay from Tract 20. Two cuttings were taken from the 37 acre field which is in its second year of a three year cycle in an alfalfa/grain rotation.

The unit is flood irrigated and provides little wildlife value due to the flooding and cutting scheduling. Alfalfa may be replace in refuge rotations by fall planted green-browse seedings which will provide for early fall goose-use and still serve as a green-manure crop.

Total revenue from the 93.98 tons of hay amounted to \$563.88.

### C. Fur Harvest

Low muskrat and mink populations did not justify trapping in 1969. Other furbearers are present in limited numbers and will be protected for their esthetic values.

### D. Timber Removal

No commercial timber was removed in 1969. Most of the remaining timber will be maintained for environmental education and esthetic reasons.

Free use permits continue to be issued for the removal of firewood from waste trees cut down in the refuge development and maintenance program.

### E. Commercial Fishing

None.

### F. Other Uses

An apiary operated by Walter Morris (Permit 37-69) was located on the south boundary of the refuge. Total revenue from the 50 hives was \$12.50. The apiary may have to be relocated due to conflict with an adjoining neighbor to the south.



## V. FIELD INVESTIGATION OR APPLIED RESEARCH

A. Progress Report

Progress reports for refuge biological work are reported below by activity.

B. Banding

After a highly successful post-season mallard banding effort in 1968, trapping success dropped drastically in 1969. Winter banding was attempted from the middle of January through the middle of March with only 231 mallards, 5 pintail and 1 green-winged teal banded. A one-month effort the previous year yielded 735 mallards.

All trapping was done with baited, funnel traps with the best success occurring on Pool 8. This unit provides the majority of open water for the wintering mallard population on the refuge.

Summary for Initial Post-Season Banding at Ravalli

	<u>1968</u>	<u>1969</u>	<u>No. Recoveries</u>
Mallard	735	231	59
Pintail	9	5	0
Shoveler	1	0	0
Widgeon	1	0	0
Green-winged teal	<u>0</u>	<u>1</u>	<u>0</u>
Totals	746	237	59

Early recovery information indicates a Montana harvest (86.4% of recoveries), and that the majority of wintering mallards are harvested in the Bitterroot Valley, particularly in the area of the refuge. Of the 59 recoveries received to date 42 (71.2%) are from the Bitterroot Valley, 35 (59.3%) are from the area of the refuge. Five recoveries have been from the Province of Alberta, two from Idaho, and one from Washington.

C. Wood Duck Nest Boxes

Nineteen additional wooden wood duck boxes were constructed and placed in refuge marshes in early April bringing the total on the area to between 50 and 60. Checks for use have been made at random since 1966 when the project was first begun, and show that some use occurred each year.

Annual maintenance is vital to a nest box program and future checks and servicing will be undertaken during the late winter months. Earlier spot checks of boxes have shown that at least two were used in 1969. Relocation of some will be necessary, but no new boxes will be installed until usage justifies it.

#### D. Artificial Nesting Sites for Geese

Three distinctly different types of artificial nesting sites have been constructed or erected in refuge marsh areas. Seven major pools (1-6 and 10) have 7080 earthen islands constructed in them. The Pool 10 area is saturated with nest platforms in the tops of trees, some of wire construction and some wash-tubs. In addition, a few nest platforms on legs have been placed over the water in Pool 8.

Previous checks for usage have not been well documented, but there are indications that some of each type were used in 1969. Checks later this winter will show the extent of use.

Earthen nesting islands probably have received the greatest use. For the most part, the islands are located in open water areas of the major refuge pools. Wave action has eroded some of them down but the pools are still saturated with suitable nest sites. "Extra" islands are utilized by loafing ganders, or by ducks. Tires and nest material placed on the islands may have contributed to the use by several pairs in 1969.

A total of 30 platforms have been placed in the tops of trees to simulate osprey nests which are often used by Bitterroot Valley geese. The structures are difficult to maintain or check for usage due to their precarious locations. No verified use has been recorded; however, one off-refuge observer reported seeing down blowing from one of the platforms in 1969.

Frequently geese have been observed using the platforms as loafing sites. These structures will be discontinued in the future because of maintenance difficulty and good acceptance of the other two types of sites on trial.

Of the three nest platforms located over the water on Pool 8, one was used and successfully hatched a brood of geese in 1969. This type of structure is readily maintained and further testing should indicate its potential for future use at Ravalli.

## VI. PUBLIC RELATIONS

### A. Recreational Uses

The 1969 summary of recreational uses, Table I, has been taken from the monthly Recreational Use Reports for the past year.

Total refuge visits decreased slightly from 1968, but some duplication was eliminated by recognizing visitors on the refuge for more than one activity. It is felt that the 15,687 visits reported in 1969 were comparable to the public use during the previous year.

By far the most important recreational use activity, both in values obtained and in numbers of visitors, was wildlife observation and tour route activity which included use of the three contact stations. Although no specific tour route has been established, excellent opportunities existed for the above activities on three miles of county road. The gravelled road passes by major refuge development and land use activities, and has three contact stations along the right of way which describe area history.

Many of the other recreational activities were related to wildlife observation and were also of great value in contributing to wildlife experiences. The picnic area and river access with six tables and restroom facilities attracted over 1000 visitors. Limited horseback riding and camping were also wildlife related.

Fishing activity decreased significantly in 1969 but 410 visits were still recorded. Access to the Bitterroot River was provided through the picnic area in the southwest corner of the refuge. Trout and whitefish are the species sought on the river which forms the west boundary of the refuge.

Refuge hunting activity was moderate considering the closeness of a relatively high population of people. The 1412 hunter visits reported during the past year represents a slight increase over 1968. About 640 acres (24 percent of the refuge) were open for waterfowl, pheasant and archery deer hunting. Details of hunting activity are included in Section VI, D.

School and organized adult and youth groups were entertained on tours of the refuge, particularly during the spring months when bird activity was at its peak. Although these activities are educational in nature, they still provide a certain amount of recreation to the participants. Particulars on the extent of this activity are described in detail in Section VI, C.

Public awareness of the existence and objectives of Ravalli Refuge is growing and more and more people are expected to visit the area for a wildlife experience in the future. Planning and control are essential to insure that recreational activities are wildlife oriented, particularly on a small area such as Ravalli.

#### B. Refuge Visitors

A total of 77 visitors was recorded in a bound office ledger in 1969, 38 of which were official visits. Twenty-six official government visits are listed, seven by Montana Fish and Game personnel. Others included, ten by Montana University personnel regarding refuge studies, and two by individuals of the news media.

Some entries have undoubtedly been left out but the register is fairly complete for official visitors. Reported recreational visits and visits by permittees represents only a partial list of those stopping at the office. Also, since the refuge office is located in the town of Stevensville the majority of such visits go unnoticed and are not recorded. An on-refuge office facility is very much needed to properly serve the public and administer the area.

#### C. Refuge Participation

During the year 33 organized groups with a total of 1020 people were accommodated on tours, talks, wildlife management lectures, and film and slide showings. In addition, six meetings of interest to the Bureau were attended.

Spring, as in most years, was the peak for tour group activity since bird activity was also at its peak. The majority of the tours were for school groups with active ornithological groups accommodated on several occasions.

A new carousel slide projector and screen was purchased late in the fall and future slide showings are expected to contribute greatly to the refuge public information and education program. Until a station slide collection is established, showings will be from the manager's personal collection.

During the last four months of 1969, refuge participation activities were recorded in a bound office ledger which will eliminate future narrative listing. The following breakdown is provided:

### Summary of Activity

<u>Activity</u>	<u>Number</u>	<u>Participants</u>
Tours:		
School groups	13	466
Organized (youth)	2	60
Ornithological	4	90 (est.)
All other	4	54
Lectures (mgt.)	2	9
Slide showings/talk	2	42
Film showings	<u>6</u>	<u>300 (est.)</u>
Totals	33	1021

#### D. Hunting

About 640 acres in the southeastern portion of the refuge was open to hunting in 1969. Although the same area was open last year the percentage of refuge acreage decreased to about 24 percent with the addition of tract 27 during the year. With this last major acquisition the refuge hunting program can now be realigned to fulfill all refuge objectives.

Hunting of waterfowl, migratory game birds, pheasant, and deer (archery only) was legal within State regulations and season dates. Hunting pressure and success varied greatly and is explained in the following sections.

#### Waterfowl

The 86 day waterfowl season ran from October 4 through December 28 for both ducks and geese. The three-mallard daily and six-goose season limitations of 1968 were eliminated from the 1969 regulations.

Fair weather throughout the season limited hunter success with very few days when hunters came out with their five-duck limit. Duck numbers were far below the populations present for the 1968 season and also contributed to the reduced success.

Hunter success during the opening weekend was good and volunteer registration reports showed that 80 hunters spent 311 hours in the field, taking 205 ducks home in the bag. A few limits were taken and the bag averaged 2.56 ducks per hunter. Educated ducks, fair weather, and reduced hunting pressure caused a pronounced drop in success after the opening. Only two periods afterward, the last week of October and the second week of December, produced moderate success.

For the entire season projected figures indicated that about 1410 hunters killed a total of 1150 ducks, including crippling losses. The reported crippling loss of 130 birds (20.2%) was thought to be minimum.

Of 633 identified species of ducks shot, 52.4 percent were mallards, 19.6 percent all species of teal, and 4-5 percent each for widgeon, scaup and shoveler. This is in great contrast to 1968 when 96 percent of the kill was mallards.

Goose hunting on the refuge was limited with only six reported shot; however, reports of kills throughout the Bitterroot Valley indicated a harvest of 50 or so birds from the flock. Valley goose-use is building and future hunting opportunities should increase.

A complete summary of waterfowl kill survey data is shown in NR-1C.

Other migratory bird hunting was limited to snipe and a few of these excellent game birds were harvested incidental to duck hunting activity. Snipe populations were fair and opportunities existed, but the harvest probably did not exceed 20-25 birds for the entire season.

#### Pheasant

The pheasant hunting season was open from noon October 25 to November 23 with a limit of three, six in possession. Unlike last year, one and two birds of the limits could be hens. Success was minimal with no known refuge kills.

Hunter pressure was very light throughout the season with most of the activity coinciding with duck hunting activities. The refuge population of wild birds was down from previous years and no State releases were made prior to the hunting season. The absence of releases on the refuge discouraged many since hunters are very much aware of release locations. The reason for no refuge releases--too much cover which would reduce hunter returns.

#### Archery Deer

The river bottom archery season extended from September 21 to November 30. Although the refuge population of white-tailed deer numbered 25, relatively few frequented the area opened to hunting. A small acreage of brush and timber west of the county road provided fair archery opportunities, but only one hunter was known to take advantage of the refuge season. Once the waterfowl season opened opportunities were further reduced. Future realignment of the hunting program could provide considerably more archery hunting which is slowly growing in importance.

### E. Violations

Considerable time was spent in 1969 on patrol and enforcement activity, primarily during the 86 day waterfowl hunting season. At least one member of the staff was on duty throughout most of the season and patrol activities were instrumental in prevention of a larger number of violations.

A total of seven cases were handled, five of which were for late shooting. In addition, two juveniles were issued formal warnings through contacts with the individuals involved and their parents.

#### 1969 Violations

<u>Date</u>	<u>Name</u>	<u>Charge</u>	<u>Disposition</u>
10/17/69	Hammersley, Arthur D.	Late shooting	No disposition
10/17/69	Kern, Bruce L.	Late shooting	\$25/3.50 fine
11/3/69	Sinkala, Michael E.	Shooting whist- ling swan	\$100/3.50 fine
11/4/69	Derenef, Richard F.	Late shooting	\$25/3.50 fine
12/9/69	Elton, Keith Anders	Late shooting	\$25 bond forfeited
12/9/69	Spierling, Robert B.	Late shooting & w/o license and stamp	\$25 ea. count & \$50 bond forfeited

Anticipated problems of trespass, and hunters entering the closed portion of the refuge through the Northern Pacific Railroad right of way did not materialize. Under an agreement with the railroad the refuge had legal authority to post and enforce trespass on the right of way this fall. Only two parties were encountered who were told about the closure and the reasons for it.

Hunting mortality of whistling swans using the refuge was alarmingly high this fall. In spite of preventative law enforcement activity at least five of the peak of 24 swans frequenting the area were shot. One apprehension was made, however, the most serious incident involving the shooting of three swans by two Ravalli County hunters will probably never be resolved.



**TABLE I**  
**SUMMARY -- 1969**

**MONTHLY RECREATIONAL USE REPORT**

Refuge name  
**Ravalli**  
State  
**Montana**

State Code <input type="text"/> <input type="text"/> (1-2)	Congressional District Code <input type="text"/> <input type="text"/> (3-4)	Refuge Code <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> (5-7)	Report Yr.   Mo. Period <b>69</b>   <input type="text"/> <input type="text"/> (8-11)																																																																																																																																																																																
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## VII. OTHER ITEMS

### A. Items of Interest

On June 24, George A. Devan and his family, wife Eleanor, and daughter Susan, left for their new home at the Willapa National Wildlife Refuge, Ilwaco, Washington. "Ged" was stationed at Ravalli for almost five years after coming from Red Rock Lakes Refuge near Monida, Montana.

We understand that the Devan family was having some difficulty adapting to the climate, but that they were also gaining new and interesting experiences on a rather unique area.

On August 22, Howard A. Lipke and his family, wife Alyn, and two daughters, Jennifer and Julie, arrived at their new Ravalli home. It was "kind of" a return home for Howard after graduating from the University of Montana, Missoula, in 1963. He had been with the Bureau for six years with duty stations at Huron, S.D. (Wetlands Acquisition), Necedah Refuge, Wisconsin, and Agassiz Refuge in Minnesota.

The Lipkes are enjoying their new home and Howard is very optimistic about the role of Ravalli in the wildlife conservation effort.

### B. Photographs

Photos were taken by George Devan and Howard Lipke.

### C. Narrative Credits

Data summarization, weather summary, typing and assembly--Mrs. Anderson.  
NR forms, photo captions, and entire narrative section--Lipke.



Refuge Manager, Howard A. Lipke



Clerk, Mrs. Ellen H. Anderson



Maintenanceman Leader, Thomas B. Davies



Maintenanceman, Otto Wolf



Snow during January was unusually heavy for the valley. Depths of up to 20" necessitated removal and resulted in wildlife food and cover shortages. 1/69 GAD



Trapping difficulty limited banding success as only 231 mallards were banded in the post-season effort. Returns to date indicate local harvest. 1/69, GAD





Tires and nest material placed on nesting islands contributed to the record 50 geese raised to flight stage. Higher production is anticipated. 4/69, GAD



Construction of a pumphouse on Spud Cellar Pond, which stores Ditch Association water, delivers water to 20 cropland acres on east refuge benchland. 5/69, GAD



Goose use tripled that of any previous year. Spring  
snow goose use attracted much attention and fall  
Canada peak of 280 was highest ever recorded. 4/69 GAD



Condemned tract 27, now under refuge administration, offers good potential for development. Oxbow necessitates diking to exclude Bitterroot River. 12/69,R-4,HAL



Dike constructed in east portion of tract 13 floods about 10-15 acres and spreads water for improved pasture and nesting cover. 5/69, GAD



About 50 wood duck boxes supplement nest sites in an already productive habitat. Late season checks indicate good acceptance and hatching success. Sp. 69, GAD





Spring brings peak in school tour-group activity. A total of 30 organized groups of 1200 people were entertained on tours, talks, lectures and showings. 4/69, GAD



Considerable fencing followed last major acquisition. Future cross-fencing will further regulate grazing of 200 head of stock on six units. 12/69, R-4, HAL



In addition to irrigation of 135 acres of cropland, water was used to irrigate 170 acres of grassland. Cover was good, even late in the season. 9/69,R-1,HAL



Noxious weed infestations, even though providing wildlife cover, will require continued control. County Weed Board is now more active. 10/69,R-3,E-20,HAL



Bitterroot River overflow always poses threat to development. This short section of levee west of Pool 10 will reduce flood threat to that unit. 9/69, R-1, HAL



Although hunting success was generally poor, about 1150 ducks were killed by the estimated 1410 hunters using the refuge. 52.4% were mallards. 10/69, R-3, HAL





Environmental education is essential to the future of resource conservation. Several lectures stressed ecology and man/environment relationship. 12/69, R-3, HAL



Wooded portion of new tract 27 offers potential for environmental education and recreation. Nature trail, picnic area and river access anticipated. 3/69, GAD



Dozer and scraper work were required on tract 21 dike which will flood about 20 acres. The pool is suited for seeding of moist soil plants. 10/69,R-2,E-23,HAL



The unit receives overflow from Pool 2 which insures needed water supply for millet plantings. Levels are controlled through 18" half-riser. 10/69,R-3,HAL



Pool 8 dike, an outgrowth of a vehicle crossing, has provided some excellent waterfowl habitat, but low and narrow dike was not ample. 10/69, R-2, E-10, HAL



A total of 3500 yards of fill were hauled from bench east of the unit to raise and widen inadequate dike. Additional raising is anticipated. 12/69, R-4, HAL



Goose nesting platforms supplement natural habitat. One of three over water was used. Structures in trees unchecked and difficult to maintain. 12/69,R-4,HAL



SIGNATURE PAGE

Submitted by:

Howard A. Lipke  
(Signature)

Refuge Manager  
(title)

Date: February 27, 1970

Approved, Regional Office:

Date: 4/2/70

Chas. J. [unclear]  
(Signature)

Asst. Reg'l Refuge Supervisor  
(Title)



(1)	(2)		(3)		(4)		(5)		(6)
III. Doves and Pigeons:									
Mourning dove	2	4/22	50	4/26	150 still present				200
White-winged dove									
IV. <del>Predaceous Birds:</del>									
<del>Bald eagle</del>	1	1/7	2	4/3	1	4/20			2
<del>Golden eagle</del>	1	1/7	3	2/7	2	4/20			4
Duck hawk									
Horned owl	10	Resident	14	March	Still present		4	8 est.	20
Magpie	From last period		150	April	100	"			150
Raven	2	3/19	12	4/12	1	4/26			20
Crow	20 last period		100	4/15	20 still present				150
Marsh hawk	2	1/1	8	4/15	6	"			10
Rough-leg hawk	2 last period		6	4/19	4	"			10
Redtail hawk	2	"	3	4/19	2	"			5
Osprey	2	4/9	4	4/26	4	"			4
						Reported by <u>O. A. Devan, Refuge Manager</u>			

#### INSTRUCTIONS

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes)  
 II. Shorebirds, Gulls and Terns (Charadriiformes)  
 III. Doves and Pigeons (Columbiformes)  
 IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first refuge record for the species for the season concerned.
- (3) Peak Numbers: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated total number of the species using the refuge during the period concerned.

3-1751

Form NR-1A

(Nov. 1945)

## MIGRATORY BIRDS

(other than waterfowl)

Refuge RavalliMonths of January

thru

April1969

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. <u>Water and Marsh Birds:</u>										
Great blue heron	From last period		14	4/25	11 still present					20
Eared grebe	4/2	3	27	4/26	27	"	"			50
Pied billed grebe	4/13	7	15	4/26	20	"	"			30
Red necked grebe	4/23	4	4	4/23	4	4/23				10
Common loon	4/19	1	1	4/19	1	4/23				2

(over)



3-1751

Form NR-1A  
(Nov. 1945)MIGRATORY BIRDS  
(other than waterfowl)Refuge RevallMonths of May thru August 1966

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. <u>Water and Marsh Birds:</u>										
Great blue heron	11	from last per.			20-30	still present				
Eared grebe	27	" "			Few	" "				
Pied billed grebe	20	" "			80-100	" "				
</										

(over)

(1)	(2)	(3)	(4)	(5)	(6)
III. <u>Doves and Pigeons:</u>					
Mourning dove	150 last period		100-150 still present		
White-winged dove					
IV. <u>Predaceous Birds:</u>					
Golden eagle					
Duck hawk					
Horned owl	10 last period		Few still present		
Magpie	100 " "		60-80 " "		
Raven					
Crow	20 " "		Few still present		
Marsh hawk	6 " "		6-8 " "		
Bough leg hawk	4 " "				
Red tailed hawk	2 " "		3-5 still present		
Osprey	4 " "	1	8/29 Present in area		
Sparrow hawk			Several still present		
Turkey vulture		1	8/29 Few present in area		
Reported by <u>Howard A. Light</u>					

#### INSTRUCTIONS

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes)  
 II. Shorebirds, Gulls and Terns (Charadriiformes)  
 III. Doves and Pigeons (Columbiformes)  
 IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first refuge record for the species for the season concerned.
- (3) Peak Numbers: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated total number of the species using the refuge during the period concerned.



3-1752  
Form NR-2  
(April 1946)

UPLAND GAME BIRDS

Refuge Ravalli

Months of May <sup>thru</sup> August, 19 69

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'd.	Estimated Total	Percentage	Hunting	For Re- stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked pheasant	Brush, grass, agricultural land 2300 acres	23-31	2	6-8	assume 1/1	-	-	-	75-100	Population of the valley remains low. Some production occurring with brood observa- tions most commonly made in south portion of refuge. Combining operations revealed relatively few adult birds.

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.\*

- |                     |  |
|---------------------|--|
| (1) SPECIES:        | Use correct common name.   |
| (2) DENSITY:        | Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks. |
| (3) YOUNG PRODUCED: | Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.  |
| (4) SEX RATIO:      | This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.  |
| (5) REMOVALS:       | Indicate total number in each category removed during the report period.   |
| (6) TOTAL:          | Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.   |
| (7) REMARKS:        | Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.  |

\* Only columns applicable to the period covered should be used.



3-1750  
Form NR-1  
(Rev. March 1953)

# W A T E R F O W L

REFUGE RAVALLI

MONTHS OF September TO December, 1969

(1) Species	(2) Weeks of reporting period									
	8/31-9/6:	9/7-13	9/14-20	9/21-27	9/28-10/4	10/5-11	10/12-18	10/19-25	10/26-11/1	11/2-8
	1	2	3	4	5	6	7	8	9	10
Swans:									8	20
Whistling										
Trumpeter										
Geese:										
Canada			3	2			90	90	100	100
Cackling										
Brant										
White-fronted										
Snow										
Blue										
<del>Other</del> TOTAL			3	2			90	90	100	100
Ducks:										
Mallard	750	850	800	800	900	1,120	1,180	1,475	2,110	2,200
Black										
Gadwall						20	30	30	80	60
Baldpate	200	220	220	200	595	660	600	510	1,800	350
Pintail	40	10	60	70	40	45	85	110	175	150
Green-winged teal	75	125	125	180	205	135	105	75	105	150
Blue-winged teal	200	190	190	90	5	5	5		5	5
Cinnamon teal	150	130	130	60						
Shoveler	90	100	120	90	50	15	15	15	20	20
Wood	130	130	130	100	80	45	30	15	15	15
Redhead	20	20	10	20	10	10	35	15	20	20
Ring-necked	35	35	35	55	55	25	10	5	10	10
Canvasback						1	1			
Scaup				10	10	35	55	55	90	90
Goldeneye	15	10	10	10					15	5
Bufflehead						15	30	15	15	15
Ruddy	40	40	40	50	40	45	45	25	40	40
<del>Other</del> H. merganser	30	30	30	20	10	20	20	20	20	20
TOTAL	1,775	1,920	1,900	1,755	2,000	2,196	2,246	2,395	3,200	3,150
Coot:	850	850	1,640	1,640	1,660	1,550	1,670	1,200	1,240	550



3-1754  
Form NR-4  
(June 1945)

SMALL MAMMALS

Refuge Barro Colorado

Year ending April 30, 1969

(1) Species	(2) Density		(3) Removals					(4) Disposition of Furs					(5) Estimated Total	
Common Name	Cover Types & Total Acreage of Habitat	Acres Per Animal	Hunting	Fur Harvest	Predator Control *	For Re- stocking	For Re- search	Share Trapping			Total Refuge Furs Shipped	Furs Donated	Furs Destroyed	Popula- tion
								Permit Number	Trappers Share	Refuge share				
Mink	Marsh, 1000 acres	33												30
Beaver	" " "	165												6
Muskrat	" " "	7												150
Striped skunk	Grass, brush, 2200 A.	73			3									30
Red fox	" " "	110			12									20
Yellow-bellied marmot	Upland, 1000 acres	50			6									20
Red squirrel	Timber, 1000 acres	10												100
Columbian ground squirrel	Grassland, 1000 acres	2												500
Badger	" " "	110												6
Raccoon	Riverbottom, timber	10												15

List removals by Predator Animal Hunter

\* List removals by Predator Animal Hunter

REMARKS:

Reported by G. A. Dwyer, Refuge Manager

## INSTRUCTIONS

Form NR-4 - SMALL MAMMALS (Include data on all species of importance in the management program; i. e., muskrats, beaver, coon, mink, coyote. Data on small rodents may be omitted except for estimated total population of each species considered in control operations.)

- (1) SPECIES: Use correct common name. Example: Striped skunk, spotted skunk, short-tailed weasel, gray squirrel, fox squirrel, white-tailed jackrabbit, etc. (Accepted common names in current use are found in the "Field Book of North American Mammals" by H. E. Anthony and the "Manual of the Vertebrate Animals of the Northeastern United States" by David Starr Jordan.)
- (2) DENSITY: Applies particularly to those species considered in removal programs. Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottom land hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) REMOVALS: Indicate the total number under each category removed since April 30 of the previous year, including any taken on the refuge by Service Predatory Animal Hunter. Also show any removals not falling under headings listed.
- (4) DISPOSITION OF FUR: On share-trapped furs list the permit number, trapper's share, and refuge share. Indicate the number of pelts shipped to market, including furs taken by Service personnel. Total number of pelts of each species destroyed because of unprime-ness or damaged condition, and furs donated to institutions or other agencies should be shown in the column provided.
- (5) TOTAL POPULATION: Estimated total population of each species reported on as of April 30.
- REMARKS: Indicate inventory method(s) used, size of sample area(s), introductions, and any other pertinent information not specifically requested.



Months of **January** **thru** **April** , 19 **69**

(1) Species	(2) Density	(3) Young Produced	(4) Sex Ratio	(5) Removals	(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'd. Estimated Total	Percentage	Hunting For Re- stocking For Research	Estimated number using Refuge
Ring neck pheasant	Brush, grass, agriculture *2300 acres	23	1/1		100	Figures require censusing at end of period. Neighboring birds moved to refuge cover during the harsh winter, then departed this spring.

\*Includes newly acquired tract 27

# INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.\*

- | (1) SPECIES: | Use correct common name.   | (2) DENSITY:        | (3) YOUNG PRODUCED:   | (4) SEX RATIO: | (5) REMOVALS:   | (6) TOTAL:    | (7) REMARKS:   |
|--------------|--|---------------------|---|----------------|---|---------------|--|
| (2) DENSITY: | Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks. | (3) YOUNG PRODUCED: | Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.                             | (4) SEX RATIO: | This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available. | (5) REMOVALS: | Indicate total number in each category removed during the report period. |
| (6) TOTAL:   | Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.   | (7) REMARKS:        | Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested. |                |   |               |  |

\* Only columns applicable to the period covered should be used.



3 -1750a

Cont. NR-1

(Rev. March 1953)

# WATERFOWL (Continuation Sheet)

REFUGE RAVALLIMONTHS OF September TO December, 19 69

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production : Broods: Estimated : seen : total	
	11/9-15	11/16-22	11/23-29	11/30-12/6	12/7-13	12/14-20	12/21-27	12/28-1/3			
Swans:											
Whistling	16	6				1			357		
Trumpeter											
Geese:											
Canada	105	125	125	130	205	220	280	200	12,474		
Cackling											
Brant											
White-fronted							1		7		
Snow											
Blue											
Other TOTAL	105	125	125	130	205	220	281	200	12,481		
Ducks:											
Mallard	2,200	2,300	2,400	2,600	2,500	3,635	4,290	3,250	247,520		
Black											
Gadwall	60	20	35	30	20	20	20	20	3,115		
Baldpate	300	300	200	165	165	145	70	70	28,130		
Pintail	150	75	150	70	70	70	70	50	10,640		
Green-winged teal	175	60	175	175	160	150	100	70	16,115		
Blue-winged teal	5								4,900		
Cinnamon teal									3,290		
Shoveler	20								3,885		
Wood	10								4,900		
Redhead	20	10							1,470		
Ring-necked	10	10		5				3	2,121		
Canvasback		5		1					56		
Scaup	125	10	20	10	10	10	5	5	3,780		
Goldeneye	5	10	25	5	5	5	5	10	945		
Bufflehead	15	10	40	15	5		5	5	1,295		
Ruddy	30	15		1				2	3,171		
Other H. merganser	50	25		5	5	10	10	10	2,345		
A. merganser			5						35		
TOTAL	3,175	2,850	3,050	3,082	2,940	4,055	4,575	3,495	348,313		
Coot:	450	60	30	30	20	5	5	10	94,220		
					(over)						

	(5)	(6)	(7)	SUMMARY
	Total Days Use	Peak Number	Total Production	
Swans	357	20	--	Principal feeding areas <u>Pool 2 prior to hunting season,</u>
Geese	12,481	281	--	<u>pools 8 and 10 after. Light use of tract 20 grain.</u>
Ducks	348,313	4,575	--	Principal nesting areas _____
Coots	94,220	1,670	--	
				Reported by <u>Howard A. Lipke, Refuge Manager</u>

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.
- (2) Weeks of Reporting Period: Estimated average refuge populations.
- (3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.
- (4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (5) Total Days Use: A summary of data recorded under (3).
- (6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C.

1953

(CONTINUATION SHEET)  
AVIATION

3-1751

Form NR-1A

(Nov. 1945)

## MIGRATORY BIRDS

(other than waterfowl)

thru

Refuge RavalliMonths of Septemberto December 1969

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Estimated Number
I. Water and Marsh Birds:							
Great blue heron	From last period		30	Late Oct.	3	12/27	(19 counted 10/25; wintering) 50
Eared grebe	From last period.		Few present				Few
Pied billed grebe	From last period.		50	Early Oct.	1	12/27	(13 counted, 10/10) 200
Red-necked grebe	1	10/10	Few	Oct.	1	10/10	Few
Western grebe	4	10/10	5	10/10	2	11/3	5

(over)



(1)	(2)	(3)	(4)	(5)	(6)
III. Doves and Pigeons:	From last period	150-200	Sept.		
Mourning dove					
White-winged dove					
IV. Predaceous Birds	From last period	1-4	Sept.	1	10/4
Golden eagle	1 12/29	1 or 2	Late Dec.		
<del>Red-tailed</del> Short-eared	Few Late Dec.	Few			
Horned owl	8-10 resident			Still present	
Magpie	From last period	200	Nov.	60-80	Wintering
Raven	4 9/30	5-10	Dec.	Still present	(wintering)
Crow	From last period	Few	Sept.		
Marsh hawk	" " "	10-15	Dec.	2	12/27 (wintering)
Rough-legged hawk	" " "	Few			Late Dec.
Red tailed hawk	" " "	3-5	Sept.	" "	" "
Sparrow hawk	" " "	Several	Sept.		
Pigeon hawk	1 12/27	1 or 2	Dec.	1	12/27
Cooper's hawk	1 Dec.	1	Dec.		
Swainson's hawk	1 11/9	1-3	11/9-18		
Turkey vulture	From last period	7	Early Sept.	7	9/2
Reported by... Howard A. Lipke					

#### INSTRUCTIONS

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes)  
II. Shorebirds, Gulls and Terns (Charadriiformes)  
III. Doves and Pigeons (Columbiformes)  
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first refuge record for the species for the season concerned.
- (3) Peak Numbers: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated total number of the species using the refuge during the period concerned.

WATERFOWL HUNTER KILL SURVEY

Refuge Ravalli

Year 1969

(1) Weeks of Hunting	(2) No. Hunters Checked	(3) Hunter Hours	(4) Waterfowl Species and Nos. of Each Bagged	(5) Total Bagged	(6) Crippling Loss	(7) Total Kill	(8) Est. No. of Hunters	(9) Est. Total Kill
10/4-10	109	404	Mallard 88, G. W. teal 36, Unknown teal 24, Ring necked 17, Shoveler 15, Wood 13, B. W. teal 12, Widgeon 7, Pintail 5, Scaup 4, H. merganser 3, C. merganser 2, Gadwall 2, Redhead 2, Ruddy 1, Unknown 1	233	36	269		
10/11-17	55	158	Mallard 18, Unknown teal 6, Widgeon 5, G. W. teal 5, Scaup 1, Shoveler 2, H. merganser 1	38	6	44		
10/18-24	30	85	Mallard 15, G. W. teal 11, Widgeon 3, Canvasback 2, Shoveler 2, Gadwall 1, Unknown teal 1, Wood 1, Merganser 1	37	11	48		
10/25-31	55	199	Mallard 21, Widgeon 10, G. W. teal 8, Scaup 8, Gadwall 5, Shoveler 3, Canvasback 2, Bufflehead 2, Unknown teal 2, Pintail 2, B. W. teal 1	64	13	77		
11/1-7	40	181	Mallard 22, Unknown 9, Scaup 4, Shoveler 4, Widgeon 2, Gadwall 2, Goldeneye 2, Unknown teal 2, Pintail 1	48	8	56		
11/8-14	51	145	Mallard 14, Widgeon 3, Scaup 3, Unknown teal 2, Pintail 2, G. W. teal 1	25	3	28		
11/15-21	43	126	Mallard 27, G. W. teal 3, Scaup 3, Goldeneye 2, Pintail 2, Gadwall 1, Redhead 1, Bufflehead 1, Unknown teal 1	41	12	53		

(over)



Year 1960

Refuge

# INSTRUCTIONS

- (1) The first week of hunting begins with opening day and ends at the close of hunting 6 days later. Successive weeks follow the same pattern.
- (2) The goal is to survey a minimum of 25 percent of refuge hunters each week and to record data only from those who have completed their day's hunting. This information should be collected during each day of the week and in each area hunted in relative proportion to the hunter effort expended. When the 25 percent goal cannot be achieved, particular care should be taken to collect representative data.
- (3) Record the total number of hours the hunters spent hunting on the refuge.
- (4) List waterfowl species in decreasing order of numbers bagged. Sample entry: Mallard (61), Pintail (36), Redhead (16), Gadwall (11), Widgeon (6), Coot (4), Canada Goose (3), Green-winged Teal (1).
- (5) Record total numbers of waterfowl bagged.
- (6) Record total numbers of waterfowl reported knocked down but not recovered.
- (7) Total of Columns 5 and 6.
- (8) Estimate the total number of hunters who hunted on the refuge during the week, including hunters checked (Column 2).
- (9) Kill sample projected to 100 percent.  $\text{Column 9} = \frac{\text{Column 8}}{\text{Column 2}} \times \text{Column 7}.$

Refuge Ravalli

Year 196<sup>9</sup>

INSTRUCTIONS

(1) Weeks of Hunting	(2) No. Hunters Checked	(3) Hunter Hours	(4) Waterfowl Species and Nos. of Each Bagged	(5) Total Bagged	(6) Crippling Loss	(7) Total Kill	(8) Est. No. of Hunters	(9) Est. Total Kill
11/22-28	28	90	Mallard 12, G. W. teal 2, Unknown teal 1, Scaup 1, Widgeon 1, C. merganser 1, H. merganser 1	19	5	24		
11/29-12/5	31	71	Mallard 24, Scaup 2, Unknown teal 1, Widgeon 1	28	4	32		
12/6-12	42	189	Mallard 50, Unknown teal 5, Pintail 3, Widgeon 2, Scaup 1, G. W. teal 1, Unknown 1	63	20	83		
12/13-19	38	113	Mallard 15, Pintail 1, Unknown teal 1	17	3	20		
12/20-26	49	158	Mallard 20, Goldeneye 2	22	5	27		
12/27 & 28	24	34	Mallard 7, Pintail 2	9	4	13		
TOTALS	595	1953		644	130 (min- imum, 20, 24)	774	1410	1150
			Breakdown for 633 reported known species:					
			Mallard 333 52.4	Goldeneye 7				
			67- G.W. teal )	H.merganser 5				
			46- Teal (unk.) ) 126 19.6	C.merganser 4				
			13- B.W. teal )	Canvasback 4				
			Widgeon 34 5.2	Redhead 3				
			Scaup 27 4.2	Bufflehead 3				
			Shoveler 26 4.1	Ruddy 1				
			Pintail 18	Unknown 11				
			Ring-necked 17					
			Wood duck 14	Coot 21	Canada geese 5			
			Gadwall 11	Snipe 4	Snow geese 1			
(over)								



INSTRUCTIONS

- (1) The first week of hunting begins with opening day and ends at the close of hunting 6 days later. Successive weeks follow the same pattern.
- (2) The goal is to survey a minimum of 25 percent of refuge hunters each week and to record data only from those who have completed their day's hunting. This information should be collected during each day of the week and in each area hunted in relative proportion to the hunter effort expended. When the 25 percent goal cannot be achieved, particular care should be taken to collect representative data.
- (3) Record the total number of hours the hunters spent hunting on the refuge.
- (4) List waterfowl species in decreasing order of numbers bagged. Sample entry: Mallard (61), Pintail (36), Redhead (16), Gadwall (11), Widgeon (6), Coot (4), Canada Goose (3), Green-winged Teal (1).
- (5) Record total numbers of waterfowl bagged.
- (6) Record total numbers of waterfowl reported knocked down but not recovered.
- (7) Total of Columns 5 and 6.
- (8) Estimate the total number of hunters who hunted on the refuge during the week, including hunters checked (Column 2).
- (9) Kill sample projected to 100 percent.  $\text{Column 9} = \frac{\text{Column 8}}{\text{Column 2}} \times \text{Column 7}.$

80348-60

(over)



UPLAND GAME BIRDS

Refuge Ravalli Months of September to December, 19 69

(1) Species	(2) Density	(3) Young Produced	(4) Sex Ratio	(5) Removals	(6) Total	(7) Remarks	
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd. Estimated Total	Percentage	Hunting For Re- stocking For Research	Estimated number using Refuge	Pertinent information not specificioally requested. List introductions here.
Ring-necked pheasant	Brush, grass & agriculture- 1000 acres	16-20	4	1M/2F	5 - -	50-60	Population low and no State releases made on refuge. Observations most frequent in south Tract 21 and west portions of Tracts 10, 11 and 20.
Hungarian (Gray) partridge	Grass & agriculture 600 acres	--	--	--	--	13	Single flock of 13 observed along Co. road along west boundary of Tract 11. Periodic use of refuge made by birds moving down from foothills.

## INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.\*

- | (1) SPECIES:             | (2) DENSITY:   | (3) YOUNG PRODUCED:   | (4) SEX RATIO:  | (5) REMOVALS:  | (6) TOTAL:   | (7) REMARKS:  |
|--------------------------|--|---|---|--|--|---|
| Use correct common name. | Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks. | Estimated number of young produced, based upon observations and actual counts in representative breeding habitat. | This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available. | Indicate total number in each category removed during the report period. | Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons. | Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested. |

\* Only columns applicable to the period covered should be used.

3-1753  
Form NR-3  
(June 1945)

BIG GAME

Refuge Ravalli

Calendar Year 1969

(1) Species	(2) Density	(3) Young Produced	(4) Removals				(5) Losses			(6) Introductions	(7) Estimated Total Refuge Population		(8) Sex Ratio
			Hunting	For Re- stocking	Sold	For Research	Predation	Disease	Winter Loss		At period of Greatest use	As of Dec. 31	
Common Name	Cover types, total Acreage of Habitat	Number								Number Source			
White-tailed deer	Brush, timber, grass & agricultural (1700 acres)	8					2 road kill 1 poached				25	20	1M/3F

Remarks: Three sets of twin fawns raised on refuge.  
Known losses include two road kills and one poached on East Side Highway, east of Tract 27.

Reported by H. A. Lipke



# INSTRUCTIONS

## Form NR-3 - BIG GAME

- (1) **SPECIES:** Use correct common name; i.e., Mule deer, black-tailed deer, white-tailed deer. It is unnecessary to indicate sub-species such as northern or Louisiana white-tailed deer.
- (2) **DENSITY:** Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge: once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) **YOUNG PRODUCED:** Estimated total number of young produced on refuge.
- (4) **REMOVALS:** Indicate total number in each category removed during the year.
- (5) **LOSSES:** On the basis of known records or reliable estimates indicate total losses in each category during the year.
- (6) **INTRODUCTIONS:** Indicate the number and refuge or agency from which stock was secured.
- (7) **TOTAL REFUGE POPULATION:** Give the estimated population of each species on the refuge at period of its greatest abundance and also as of Dec. 31.
- (8) **SEX RATIO:** Indicate the percentage of males and females of each species as determined from field observations or through removals.

DISEASE

Refuge Ravalli Year 19 69

Botulism

Lead Poisoning or other Disease

Period of outbreak NONE

Period of heaviest losses \_\_\_\_\_

Losses:

	Actual Count	Estimated
(a) Waterfowl	_____	_____
(b) Shorebirds	_____	_____
(c) Other	_____	_____

Number Hospitalized	No. Recovered	% Recovered
(a) Waterfowl	_____	_____
(b) Shorebirds	_____	_____
(c) Other	_____	_____

Areas affected (location and approximate acreage) \_\_\_\_\_

Water conditions (average depth of water in sickness areas, reflooding of exposed flats, etc.) \_\_\_\_\_

Condition of vegetation and invertebrate life \_\_\_\_\_

Remarks \_\_\_\_\_

Kind of disease \_\_\_\_\_

Species affected \_\_\_\_\_

Number Affected Species	Actual Count	Estimated
_____	_____	_____
_____	_____	_____
_____	_____	_____

Number Recovered \_\_\_\_\_

Number lost \_\_\_\_\_

Source of infection \_\_\_\_\_

Water conditions \_\_\_\_\_

Food conditions \_\_\_\_\_

Remarks \_\_\_\_\_



Refuge Ravalli Year 19 69

Collections and Receipts (Seeds, rootstocks, trees, shrubs)							Plantings (Marsh - Aquatic - Upland)						
Species	Amount (Lbs., bus., etc.)	(2) C or R	Date	Method or Source	Cost	(3) Total Amount on Hand	Location of Area Planted	Rate of Seeding or Planting	Amount Planted (Acres or Yards of Shoreline)	Amount and Nature of Propagules	Date	Survival	Cause of Loss
		None in 1969							None in 1969				

- (1) Report agronomic farm crops on Form NR-8  
(2) C = Collections and R = Receipts  
(3) Use "S" to denote surplus

Total acreage planted:

Marsh and aquatic \_\_\_\_\_  
Hedgerows, cover patches \_\_\_\_\_  
Food strips, food patches \_\_\_\_\_  
Forest plantings \_\_\_\_\_

Remarks: Plantings of Russian olive, Honeysuckle and Caragana  
in 1968 are still showing good survival with only a few  
seedlings lost in the last year. Cultivation and watering  
in 1969 helped to further establish the plantings.  
Survival estimated between 75-80%.

3-1758  
Form NR-8  
(Rev. Jan. 1956)

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge Bavalli

County Bavalli

State Montana

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Water- fowl Browsing Crops Type and Kind	Total Acreage
	Acres	Bu./Tons	Harvested		Unharvested				
			Acres	Bu./Tons	Acres	Bu./Tons			
Barley	62	3930 Bu.	9	540 bu.	22	1380 bu.	93	Winter wheat (browse in fall & spring, but will produce grain crop in 1970.)	63
Wheat (Gaines)	47	4700 bu.	2	180 bu.	21	2100 bu.	70		
Totals	109	8630 bu.	11	720 bu.	43	3480 bu.	163		
								Fallow Ag. Land	30

No. of Permittees: Agricultural Operations 2 Haying Operations 1 Grazing Operations 6

1 apiary - 50 hives @.25 - \$12.50

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
Alfalfa	94	37	\$563.88	1. Cattle	180	754.36	\$2263.08	820
				2. Other * Horses-mules	25	90	142.29	180
				1. Total Refuge Acreage Under Cultivation				293
Hay - Wild				2. Acreage Cultivated as Service Operation				--

\*Includes up to 14 head of horses and mules owned by Forest Service--free use permit (intermittent use).



DIRECTIONS FOR PREPARING FORM NR-8  
CULTIVATED CROPS - HAYING - GRAZING

Report Form NR-8 should be prepared on a calendar-year basis for all crops which were planted during the calendar year and for haying and grazing operations carried on during the same period.

Separate reports shall be furnished for Refuge lands in each county when a refuge is located in more than one county or State.

Cultivated Crops Grown - List all crops planted, grown and harvested on the refuge during the reporting period regardless of purpose. Crops in kind which have been planted by more than one permittee or this Service shall be combined for reporting purposes.

Permittee's Share - Only the number of acres utilized by the permittee for his own benefit should be shown under the Acres column, and only the number of bushels of farm crops harvested by the permittee for himself should be shown under the Bushels Harvested column. Report all crops harvested in bushels or fractions thereof except such crops as silage, watermelons, cotton, tobacco, and hay, which should be reported in tons or fractions thereof.

Government's Share or Return - Harvested - Show the acreage and number of bushels harvested for the Government of crops produced by permittees or refuge personnel. Unharvested - Show the exact acreage and the estimated number of bushels of grain available for wildlife. If grazing is made available to waterfowl through the planting of grain, cover, green manure, grazing or hay crops, estimate the tonnage of green food produced or utilized and report under Bushels Unharvested column.

Total Acreage Planted - Report all acreage planted, including crop failures.

Green Manure, Cover and Waterfowl Grazing Crops - Specify the acreage, kind and purpose of the crop. These crops and the acreage may be duplicated under cultivated crops if planted during the year, or a duplication may occur under hay if the crop results from a perennial planting.

Hay - Improved - List separately the kinds of improved hay grown. Annual plantings should also be reported under Cultivated Crops, and perennial hay should be listed in the same manner at time of planting.

Total Refuge Acreage Under Cultivation - Report total land area devoted to agricultural purposes during the year.

## REFUGE GRAIN REPORT

Refuge RAVALLIMonths of January through December, 1969

(1) VARIETY*	(2) ON HAND BEGINNING OF PERIOD	(3) RECEIVED DURING PERIOD	(4) TOTAL	(5) GRAIN DISPOSED OF				(6) ON HAND END OF PERIOD	(7) PROPOSED OR SUITABLE USE*		
				Transferred	Seeded	Fed	Total		Seed	Feed	Surplus
Barley	300	540	840			150	150	690		690	
Wheat, winter		180	180				-	180		180	
White-dutch clover		8	8				-	8	8		
Timothy		31	31				-	31	31		

(8) Indicate shipping or collection points Northern Pacific R.R. depot, Stevensville(9) Grain is stored at Headquarters granaries--work center and Q-2 area.(10) Remarks Barley and wheat used for banding and emergency feeding.

\*See instructions on back.



## REFUGE GRAIN REPORT

This report should cover all grain on hand, received, or disposed of, during the period covered by this narrative report.

**Report all grain in bushels.** For the purpose of this report the following approximate weights of grain shall be considered equivalent to a bushel: Corn (shelled)—55 lb., corn (ear)—70 lb., wheat—60 lb., barley—50 lb., rye—55 lb., oats—30 lb., soy beans—60 lb., millet—50 lb., cowpeas—60 lb., and mixed—50 lb. In computing volume of granaries, multiply the cubic contents (cu. ft.) by 0.8 bushels.

- (1) List each type of grain separately and specifically, as flint corn, yellow dent corn, square deal hybrid corn, garnet wheat, red May wheat, durum wheat, spring wheat, proso millet, combine milo, new era cowpeas, mikado soy beans, etc. Mere listing as corn, wheat, and soybeans will not suffice, as specific details are necessary in considering transfer of seed supplies to other refuges. Include only domestic grains; aquatic and other seeds will be listed on NR-9.
- (3) Report all grain received during period from all sources, such as transfer, share cropping, or harvest from food patches.
- (4) A total of columns 2 and 3.
- (6) Column 4 less column 5.
- (7) This is a proposed break-down by varieties of grain listed in column 6. Indicate if grain is suitable for seeding new crops.
- (8) Nearest railroad station for shipping and receiving.
- (9) Where stored on refuge: "Headquarters granary," etc.
- (10) Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.

TIMBER REMOVAL

Refuge Ravalli Year 1969

Permittee	Permit No.	Unit or Location	Acreage	No. of Units Expressed in B. F., ties, etc.	Rate of Charge	Total Income	Reservations and/or Diameter Limits	Species Cut
NONE								

Total acreage cut over..... Total income.....

No. of units removed B. F. .... Method of slash disposal.....

Cords.....

Ties.....

ANNUAL REPORT OF PESTICIDE APPLICATION

Proposal Number

Reporting Year

**1969**

INSTRUCTIONS: Wildlife Refuges Manual, secs. 3252d, 3394b and 3395.

Date(s) of Application	List of Target Pest(s)	Location of Area Treated	Total Acres Treated	Chemical(s) Used	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Application
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) Early June	Broadleaf annuals: Mustard Canada thistle Scotch "	Agricultural lands- tracts 10, 11, 19, 20, 21	163	2,4-D, PGBEE	44 lbs./A. (11 gal.@4#/A.)	.25 lbs./A.	Water 10 gal/A.	Tractor with boom spray
(2) June 1-10	Knapweed Thistles	Dikes & roads, patches--south refuge area	8.6	2,4-D, DMS	24 lbs./A. (6 gal.@4#/A.)	2.8 lbs./A.	Water 20 gal/A.	County spray-truck, hand nozzle
(3) June 11 & 13	Knapweed Thistles	Pasture- G-19 tract 19 W.	28	2,4,D, DMS	84 lbs./A. (21 gal.@4#/A.)	3 lbs./A.	Water 20 gal/A.	"

10. Summary of results (continue on reverse side, if necessary)

- (1) 95-100% kill on prime target (annual mustard); slowed growth of thistles but very little kill resulted (3# rate needed for thistle control).
- (2) Estimate 60-75% kill. Heavy density of some thistle patches along dikes prevents complete coverage of all plants. Repeated sprayings needed to eventually control infestations.
- (3) Grassland sprayed at expense of Forest Service. Spot treatment of remaining patches from previous control efforts on 80 acres of grassland was 50-75% successful. Each year of spraying reduces pest plants and improves grass cover.

DISEASE

Refuge Ravalli Year 19. 69

Botulism

Lead Poisoning or other Disease

Period of outbreak N O N E

Period of heaviest losses \_\_\_\_\_

Losses:

	Actual Count	Estimated
(a) Waterfowl	_____	_____
(b) Shorebirds	_____	_____
(c) Other	_____	_____

Number Hospitalized	No. Recovered	% Recovered
(a) Waterfowl	_____	_____
(b) Shorebirds	_____	_____
(c) Other	_____	_____

Areas affected (location and approximate acreage) \_\_\_\_\_

Water conditions (average depth of water in sickness areas, reflooding of exposed flats, etc.

Condition of vegetation and invertebrate life \_\_\_\_\_

Remarks \_\_\_\_\_

Kind of disease \_\_\_\_\_

Species affected \_\_\_\_\_

Number Affected Species	Actual Count	Estimated
_____	_____	_____
_____	_____	_____
_____	_____	_____

Number Recovered \_\_\_\_\_

Number lost \_\_\_\_\_

Source of infection \_\_\_\_\_

Water conditions \_\_\_\_\_

Food conditions \_\_\_\_\_

Remarks \_\_\_\_\_



3-1757  
Form NR-7  
(Rev. June 1960)

(1)  
NONAGRICULTURAL COLLECTIONS, RECEIPTS, AND PLANTINGS

Refuge Ravalli

Year 19 69

Collections and Receipts (Seeds, rootstocks, trees, shrubs)							Plantings (Marsh - Aquatic - Upland)						
Species	Amount (Lbs., bus., etc.)	(2) C or R	Date	Method or Source	Cost	(3) Total Amount on Hand	Location of Area Planted	Rate of Seeding or Planting	Amount Planted (Acres or Yards of Shoreline)	Amount and Nature of Propagules	Date	Survival	Cause of Loss
			None in 1969						None in 1969				

- (1) Report agronomic farm crops on Form NR-8  
(2) C = Collections and R = Receipts  
(3) Use "S" to denote surplus

Total acreage planted:

Marsh and aquatic \_\_\_\_\_  
Hedgerows, cover patches \_\_\_\_\_  
Food strips, food patches \_\_\_\_\_  
Forest plantings \_\_\_\_\_

Remarks: Plantings of Russian olive, Honeysuckle and Caragana  
in 1968 are still showing good survival with only a few  
seedlings lost in the last year. Cultivation and watering  
in 1969 helped to further establish the plantings.  
Survival estimated between 75-80%.

3-1758  
Form NR-8  
(Rev. Jan. 1956)

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge Ravalli

County Ravalli

State Montana

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Water- fowl Browsing Crops Type and Kind	Total Acreage
	Acres	Bu./Tons	Harvested		Unharvested				
			Acres	Bu./Tons	Acres	Bu./Tons			
Barley	62	3930 Bu.	9	540 bu.	22	1380 bu.	93	Winter wheat (browse in fall & spring, but will produce grain crop in 1970.)	63
Wheat (Gaines)	47	4700 bu.	2	180 bu.	21	2100 bu.	70		
Totals	109	8630 bu.	11	720 bu.	43	3480 bu.	163		
								Fallow Ag. Land	30

No. of Permittees: Agricultural Operations 2 Haying Operations 1 Grazing Operations 6  
1 apiary - 50 hives @.25 - \$12.50

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
Alfalfa	94	37	\$563.88	1. Cattle	180	754.36	\$2263.08	820
				2. Other* Horses-mules	25	90	142.29	180
				1. Total Refuge Acreage Under Cultivation				293
Hay - Wild				2. Acreage Cultivated as Service Operation				--

\*Includes up to 14 head of horses and mules owned by Forest Service--free use permit (intermittent use).



DIRECTIONS FOR PREPARING FORM NR-8  
CULTIVATED CROPS - HAYING - GRAZING

Report Form NR-8 should be prepared on a calendar-year basis for all crops which were planted during the calendar year and for haying and grazing operations carried on during the same period.

Separate reports shall be furnished for Refuge lands in each county when a refuge is located in more than one county or State.

Cultivated Crops Grown - List all crops planted, grown and harvested on the refuge during the reporting period regardless of purpose. Crops in kind which have been planted by more than one permittee or this Service shall be combined for reporting purposes.

Permittee's Share - Only the number of acres utilized by the permittee for his own benefit should be shown under the Acres column, and only the number of bushels of farm crops harvested by the permittee for himself should be shown under the Bushels Harvested column. Report all crops harvested in bushels or fractions thereof except such crops as silage, watermelons, cotton, tobacco, and hay, which should be reported in tons or fractions thereof.

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Total Acreage Planted - Report all acreage planted, including crop failures.

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Hay - Improved - List separately the kinds of improved hay grown. Annual plantings should also be reported under Cultivated Crops, and perennial hay should be listed in the same manner at time of planting.

Total Refuge Acreage Under Cultivation - Report total land area devoted to agricultural purposes during the year.

## REFUGEE GRAIN REPORT

Refuge RAVALLIMonths of January through December, 1969

(1) VARIETY*	(2) ON HAND BEGINNING OF PERIOD	(3) RECEIVED DURING PERIOD	(4) TOTAL	(5) GRAIN DISPOSED OF				(6) ON HAND END OF PERIOD	(7) PROPOSED OR SUITABLE USE*		
				Transferred	Seeded	Fed	Total		Seed	Feed	Surplus
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Timothy		31	31				-	31	31		

(8) Indicate shipping or collection points Northern Pacific R.R. depot, Stevensville(9) Grain is stored at Headquarters granaries--work center and Q-2 area.(10) Remarks Barley and wheat used for banding and emergency feeding.

\*See instructions on back.



## REFUGE GRAIN REPORT

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**Report all grain in bushels.** For the purpose of this report the following approximate weights of grain shall be considered equivalent to a bushel: Corn (shelled)—55 lb., corn (ear)—70 lb., wheat—60 lb., barley—50 lb., rye—55 lb., oats—30 lb., soy beans—60 lb., millet—50 lb., cowpeas—60 lb., and mixed—50 lb. In computing volume of granaries, multiply the cubic contents (cu. ft.) by 0.8 bushels.

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- (9) Where stored on refuge: "Headquarters granary," etc.
- (10) Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.

TIMBER REMOVAL

Refuge Ravalli Year 1969

Permittee	Permit No.	Unit or Location	Acreage	No. of Units Expressed in B. F., ties, etc.	Rate of Charge	Total Income	Reservations and/or Diameter Limits	Species Cut
NONE								

Total acreage cut over..... Total income.....

No. of units removed B. F. .... Method of slash disposal.....

Cords.....

Ties.....

.....

## ANNUAL REPORT OF PESTICIDE APPLICATION

Proposal Number

Reporting Year

1969

INSTRUCTIONS: Wildlife Refuges Manual, secs. 3252d, 3394b and 3395.

Date(s) of Application	List of Target Pest(s)	Location of Area Treated	Total Acres Treated	Chemical(s) Used	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Application
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## UPLAND GAME BIRDS

Refuge RavalliMonths of September to December, 19 69

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re- stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked pheasant	Brush, grass & agriculture- 1000 acres	16-20	4		1M/2F	5	-	-	50-60	Population low and no State releases made on refuge. Observations most frequent in south Tract 21 and west portions of Tracts 10, 11 and 20.
Hungarian (Gray) partridge	Grass & agriculture 600 acres	--			--				13	Single flock of 13 observed along Co. road along west boundary of Tract 11. Periodic use of refuge made by birds moving down from foothills.

\* Only columns applicable to the period covered should be used.



UPLAND GAME BIRDS

December 19 69 INSTRUCTIONS

Refuge - Ravalin

Form NR-2 - UPLAND GAME BIRDS.\*

(1) SPECIES:	(2) DENSITY:	(3) YOUNG PRODUCED:	(4) SEX RATIO:	(5) REMOVALS:	(6) TOTAL:	(7) REMARKS:
Use correct common name.	Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.	Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.	This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.	Indicate total number in each category removed during the report period.	Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.	Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

\* Only columns applicable to the period covered should be used.

3-1753  
Form NR-3  
(June 1945)

BIG GAME

Refuge Ravalli

Calendar Year 1969

(1) Species	(2) Density	(3) Young Produced	(4) Removals				(5) Losses			(6) Introductions	(7) Estimated Total Refuge Population		(8) Sex Ratio
			Hunting	For Re- stocking	Sold	For Research	Predation	Disease	Winter Loss		At period of Greatest use	As of Dec. 31	
Common Name	Cover types, total Acreage of Habitat	Number								Number	Source		
White-tailed deer	Brush, timber, grass & agricultural (1700 acres)	8					2 road kill 1 poached				25	20	1M/3F

Remarks: Three sets of twin fawns raised on refuge.  
Known losses include two road kills and one poached on East Side Highway, east of Tract 27.

Reported by H. A. Lipke

# INSTRUCTIONS

Form NR-3 - BIG GAME

- (1) SPECIES: Use correct common name; i.e., Mule deer, black-tailed deer, white-tailed deer. It is unnecessary to indicate sub-species such as northern or Louisiana white-tailed deer.
- (2) DENSITY: Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge: once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) YOUNG PRODUCED: Estimated total number of young produced on refuge.
- (4) REMOVALS: Indicate total number in each category removed during the year.
- (5) LOSSES: On the basis of known records or reliable estimates indicate total losses in each category during the year.
- (6) INTRODUCTIONS: Indicate the number and refuge or agency from which stock was secured.
- (7) TOTAL REFUGE POPULATION: Give the estimated population of each species on the refuge at period of its greatest abundance and also as of Dec. 31.
- (8) SEX RATIO: Indicate the percentage of males and females of each species as determined from field observations or through removals.



## WATERFOWL HUNTER KILL SURVEY

Refuge	Ravalli
--------	---------

Year 1969

(1) Weeks of Hunting	(2) No. Hunters Checked	(3) Hunter Hours	(4) Waterfowl Species and Nos. of Each Bagged	(5) Total Bagged	(6) Crippling Loss	(7) Total Kill	(8) Est. No. of Hunters	(9) Est. Total Kill
10/4-10	109	404	Mallard 88, G. W. teal 36, Unknown teal 24, Ring necked 17, Shoveler 15, Wood 13, B. W. teal 12, Widgeon 7, Pintail 5, Scaup 4, H. merganser 3, C. merganser 2, Gadwall 2, Redhead 2, Ruddy 1, Unknown 1	233	36	269		
10/11-17	55	158	Mallard 18, Unknown teal 6, Widgeon 5, G. W. teal 5, Scaup 1, Shoveler 2, H. merganser 1	38	6	44		
10/18-24	30	85	Mallard 15, G. W. teal 11, Widgeon 3, Canvasback 2, Shoveler 2, Gadwall 1, Unknown teal 1, Wood 1, Merganser 1	37	11	48		
10/25-31	55	199	Mallard 21, Widgeon 10, G. W. teal 8, Scaup 8, Gadwall 5, Shoveler 3, Canvasback 2, Bufflehead 2, Unknown teal 2, Pintail 2, B. W. teal 1	64	13	77		
11/1-7	40	181	Mallard 22, Unknown 9, Scaup 4, Shoveler 4, Widgeon 2, Gadwall 2, Goldeneye 2, Unknown teal 2, Pintail 1	48	8	56		
11/8-14	51	145	Mallard 14, Widgeon 3, Scaup 3, Unknown teal 2, Pintail 2, G. W. teal 1	25	3	28		
11/15-21	43	126	Mallard 27, G. W. teal 3, Scaup 3, Goldeneye 2, Pintail 2, Gadwall 1, Redhead 1, Bufflehead 1, Unknown teal 1	41	12	53		

(over)



WATERFOWL HUNTER KILL SURVEY

Year 1960

Refuge

INSTRUCTIONS

- (1) The first week of hunting begins with opening day and ends at the close of hunting 6 days later. Successive weeks follow the same pattern.
- (2) The goal is to survey a minimum of 25 percent of refuge hunters each week and to record data only from those who have completed their day's hunting. This information should be collected during each day of the week and in each area hunted in relative proportion to the hunter effort expended. When the 25 percent goal cannot be achieved, particular care should be taken to collect representative data.
- (3) Record the total number of hours the hunters spent hunting on the refuge.
- (4) List waterfowl species in decreasing order of numbers bagged. Sample entry: Mallard (61), Pintail (36), Redhead (16), Gadwall (11), Widgeon (6), Coot (4), Canada Goose (3), Green-winged Teal (1).
- (5) Record total numbers of waterfowl bagged.
- (6) Record total numbers of waterfowl reported knocked down but not recovered.
- (7) Total of Columns 5 and 6.
- (8) Estimate the total number of hunters who hunted on the refuge during the week, including hunters checked (Column 2).
- (9) Kill sample projected to 100 percent.  $\text{Column 9} = \frac{\text{Column 8}}{\text{Column 2}} \times \text{Column 7}.$

Refuge Ravalli

Year 1969

(1) Weeks of Hunting	(2) No. Hunters Checked	(3) Hunter Hours	(4) Waterfowl Species and Nos. of Each Bagged	(5) Total Bagged	(6) Crippling Loss	(7) Total Kill	(8) Est. No. of Hunters	(9) Est. Total Kill																																																																								
11/22-28	28	90	Mallard 12, G. W. teal 2, Unknown teal 1, Scaup 1, Widgeon 1, C. merganser 1, H. merganser 1	19	5	24																																																																										
11/29-12/5	31	71	Mallard 24, Scaup 2, Unknown teal 1, Widgeon 1	28	4	32																																																																										
12/6-12	42	189	Mallard 50, Unknown teal 5, Pintail 3, Widgeon 2, Scaup 1, G. W. teal 1, Unknown 1	63	20	83																																																																										
12/13-19	38	113	Mallard 15, Pintail 1, Unknown teal 1	17	3	20																																																																										
12/20-26	49	158	Mallard 20, Goldeneye 2	22	5	27																																																																										
12/27 & 28	24	34	Mallard 7, Pintail 2	9	4	13																																																																										
TOTALS	595	1953		644	130 (min- imum, 20.2%)	774	1410	1150																																																																								
			Breakdown for 633 reported known species:																																																																													
			<table><tr><td></td><td></td><td>%</td><td></td><td></td><td></td></tr><tr><td>Mallard</td><td>333</td><td>52.4</td><td>Goldeneye</td><td>7</td><td></td></tr><tr><td>67- G.W. teal )</td><td></td><td></td><td>H.merganser</td><td>5</td><td></td></tr><tr><td>46- Teal (unk.) )</td><td>126</td><td>19.6</td><td>C.merganser</td><td>4</td><td></td></tr><tr><td>13- B.W. teal )</td><td></td><td></td><td>Canvasback</td><td>4</td><td></td></tr><tr><td>Widgeon</td><td>34</td><td>5.2</td><td>Redhead</td><td>3</td><td></td></tr><tr><td>Scaup</td><td>27</td><td>4.2</td><td>Bufflehead</td><td>3</td><td></td></tr><tr><td>Shoveler</td><td>26</td><td>4.1</td><td>Ruddy</td><td>1</td><td></td></tr><tr><td>Pintail</td><td>18</td><td></td><td>Unknown</td><td>11</td><td></td></tr><tr><td>Ring-necked</td><td>17</td><td></td><td></td><td></td><td></td></tr><tr><td>Wood duck</td><td>14</td><td></td><td>Coot</td><td>21</td><td>Canada geese 5</td></tr><tr><td>Gadwall</td><td>11</td><td></td><td>Snipe</td><td>4</td><td>Snow geese 1</td></tr></table>								%				Mallard	333	52.4	Goldeneye	7		67- G.W. teal )			H.merganser	5		46- Teal (unk.) )	126	19.6	C.merganser	4		13- B.W. teal )			Canvasback	4		Widgeon	34	5.2	Redhead	3		Scaup	27	4.2	Bufflehead	3		Shoveler	26	4.1	Ruddy	1		Pintail	18		Unknown	11		Ring-necked	17					Wood duck	14		Coot	21	Canada geese 5	Gadwall	11		Snipe	4	Snow geese 1
		%																																																																														
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Scaup	27	4.2	Bufflehead	3																																																																												
Shoveler	26	4.1	Ruddy	1																																																																												
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Wood duck	14		Coot	21	Canada geese 5																																																																											
Gadwall	11		Snipe	4	Snow geese 1																																																																											
			(over)																																																																													



Refuge Ravalii

Year 1962

# INSTRUCTIONS

- (1) The first week of hunting begins with opening day and ends at the close of hunting 6 days later. Successive weeks follow the same pattern.
- (2) The goal is to survey a minimum of 25 percent of refuge hunters each week and to record data only from those who have completed their day's hunting. This information should be collected during each day of the week and in each area hunted in relative proportion to the hunter effort expended. When the 25 percent goal cannot be achieved, particular care should be taken to collect representative data.
- (3) Record the total number of hours the hunters spent hunting on the refuge.
- (4) List waterfowl species in decreasing order of numbers bagged. Sample entry: Mallard (61), Pintail (36), Redhead (16), Gadwall (11), Widgeon (6), Coot (4), Canada Goose (3), Green-winged Teal (1).
- (5) Record total numbers of waterfowl bagged.
- (6) Record total numbers of waterfowl reported knocked down but not recovered.
- (7) Total of Columns 5 and 6.
- (8) Estimate the total number of hunters who hunted on the refuge during the week, including hunters checked (Column 2).
- (9) Kill sample projected to 100 percent.  $\text{Column 9} = \frac{\text{Column 8}}{\text{Column 2}} \times \text{Column 7}$ .

80348-60

(over)

3-1751

Form NR-1A  
(Nov. 1945)MIGRATORY BIRDS  
(other than waterfowl)

thru

Refuge RavalliMonths of September to December 1966

(1) Species  Common Name	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production  Number of Eggs or Clutches Nests Young			(6) Total  Estimated Number
	Number	Date	Number	Date	Number	Date				
<b>I. Water and Marsh Birds:</b>										
Great blue heron	From last period		30	Late Oct.	3	12/27	(19 counted 10/25; wintering)			50
Eared grebe	From last period.		Few present.	Nov.						Few
Pied billed grebe	From last period.		50	Early Oct.	11	12/27	(13 counted, 10/10)			200
Red-necked grebe	1	10/10	Few	Oct.	1	10/10				Few
Western grebe	4	10/10	5	10/10	2	11/3				5
		"		Sept.	3-5	"				
		"		Sept.	Several	"				
		"	1	Dec.	1 or 2	12/27				
		"		Dec.	1	Dec.				
		"		11/9-18	1-3	11/9				
		"		Early Sept.	7	From last period				
<b>II. Shorebirds, Gulls and Terns:</b>										
Killdeer	From last period		200	Oct.	2	12/27	(Wintering)			
Wilson's snipe	"	"	200	Mid Oct.	1	12/28	(22 counted 10/10)			
Greater yellowlegs	"	"	Several	Oct.	1	11/18				
Dowitcher	8	10/12	10-20	Early Oct.		Mid Oct.				
Sandpipers	Two species represented in		small numbers.							
Sora rail	From last period		Few		1	12/21				
Forster's tern	1	9/15	Few	Sept.	1	9/15				
Ring-billed gull	1	9/15	1-3	Sept.	1	12/28				10

(over)



(1)	(2)	(3)	(4)	(5)	(6)
III. <u>Doves and Pigeons:</u>	From last period	150-200	Sept.		
Mourning dove					
White-winged dove					
IV. <u>Predaceous Birds</u>	From last period	1-4	Sept.	1	10/4
Osprey					
Golden eagle	1	12/29	1 or 2	Late Dec.	
<del>Duck hawk</del> Short-eared	Few	Late Dec.	Few		
Horned owl	8-10	resident		Still present	
Magpie	From last period	200	Nov.	60-80	Wintering
Raven	4	9/30	5-10	Dec.	Still present (wintering)
Crow	From last period	Few	Sept.		
Marsh hawk	" "	" "	10-15	Dec.	2 12/27 (wintering)
Rough-legged hawk	" "	" "	Few		Late Dec.
Red tailed hawk	" "	" "	3-5	Sept.	" "
Sparrow hawk	" "	" "	Several	Sept.	
Pigeon hawk	1	12/27	1 or 2	Dec.	1 12/27
Cooper's hawk	1	Dec.	1	Dec.	
Swainson's hawk	1	11/9	1-3	11/9-18	
Turkey vulture	From last period	7	Early Sept.	7	9/2 Reported by Howard A. Lipke

#### INSTRUCTIONS

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes)  
II. Shorebirds, Gulls and Terns (Charadriiformes)  
III. Doves and Pigeons (Columbiformes)  
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first refuge record for the species for the season concerned.
- (3) Peak Numbers: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated total number of the species using the refuge during the period concerned.

3-1750  
Form NR-1  
(Rev. March 1953)

W A T E R F O W L

REFUGE RAVALLI

MONTHS OF January <sup>thru</sup> 20 April, 1969

(1) Species	Weeks of reporting period									
	12/29	1/5	1/12	1/19	1/26 (2)	2/2	2/9	2/16	2/23	3/2
	1	2	3	4	5	6	7	8	9	10
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada	110	14	14	20	20	42	42	53	40	40
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other										
TOTALS	110	14	14	20	20	42	42	53	40	40
Ducks:										
Mallard	4,000	2,300	2,300	2,000	2,000	2,500	1,500	1,500	1,200	1,200
Black										
Gadwall	200	100	100				50	50	50	50
Baldpate	100	200	200	100	100	100	100	50	50	100
Pintail	100	50	50	50	50	50	50	50	50	10
Green-winged teal	300		100	25	25	25	25	25	25	50
Blue-winged teal										
Cinnamon teal										
Shoveler		50	50							
Wood	10									
Redhead							50	50	50	50
Ring-necked										25
Canvasback							50	10	10	30
Scaup							25	25	25	30
Goldeneye							25	25	25	50
Bufflehead		5		10			25	25	25	25
Ruddy										
<del>Saker</del> C. merganser		10			5	10	20	10	10	
Hooded merganser									5	10
TOTALS	5,010	2,715	2,800	2,185	2,185	1,685	1,920	1,820	1,525	1,630
Coot:	200	280	200	100	100	50	50	50	50	100



3-1750a

Cont. NR-1

(Rev. March 1953)

# WATERFOWL (Continuation Sheet)

REFUGE RAVALLIMONTHS OF January thru April, 19 69

(1) Species	Weeks of reporting period							(3) Estimated waterfowl days use	(4) Production Broods: Estimated seen : total
	11	12	13	14	15	16	17	18	
Swans:									
Whistling			3	72	112	42	28		1,799
Trumpeter									
Geese:									
Canada	112	90	110	80	80	80	70		7,119
Cackling									
Brant									
White-fronted									
Snow				70	115	90			1,925
Blue									
Other -- Ross				20	20	30			490
Ducks:	112	90	110	170	215	200	70		9,534
<b>TOTALS</b>	<b>1,100</b>	<b>2,000</b>	<b>5,200</b>	<b>4,000</b>	<b>4,000</b>	<b>3,000</b>	<b>3,000</b>		<b>294,700</b>
Mallard									
Black									
Gadwall	50	100	300	200	200	200	200		12,750
Baldpate	100	100	1,000	1,000	1,000	800	500		41,300
Pintail	300	300	800	600	600	500	400		28,070
Green-winged teal	100	200	300	300	400	400	300		18,200
Blue-winged teal						50	100		1,050
Cinnamon teal						10	50		420
Shoveler	50	50	200	300	300	400	200		11,200
Wood				6	10	50	200		1,932
Redhead	50	75	200	100	100	100	100		6,475
Ring-necked	25	25	50	50	50	25	25		1,925
Canvasback	30	30	50	50	100	200	50		4,270
Scaup	30	30	50	50	100	100	150		4,305
Goldeneye	50	50	100	100	100	50	50		4,375
Bufflehead	25	25	50	50	50	50	50		2,905
Ruddy						10	50		420
Other -- C. merganser			15	20	20	20	20		840
Hooded merganser	10	10	10	15	20	20	20		840
<b>TOTALS</b>	<b>2,220</b>	<b>2,995</b>	<b>8,325</b>	<b>6,861</b>	<b>7,030</b>	<b>5,905</b>	<b>5,445</b>		<b>436,116</b>
Coot:	100	150	400	800	1,000	1,000	2,000		40,410
					(over)				

	(5)	(6)	(7)	
	Total Days Use	Peak Number	Total Production	SUMMARY
Swans	1,799	112		Principal feeding areas Entire area, sloughs, marshes
Geese	9,534	112		and grain fields.
Ducks	436,177	8,325		Principal nesting areas --
Coots	46,410	2,000		

Reported by G. A. Devan, Refuge Manager

# CLASS C. INVENTORY

## INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.
- (2) Weeks of Reporting Period: Estimated average refuge populations.
- (3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.
- (4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (5) Total Days Use: A summary of data recorded under (3).
- (6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C.

1953



W A T E R F O W L

REFUGE RAVALLI

MONTHS OF September TO December, 1969

(1) Species	(2) Weeks of reporting period									
	8/31-9/6:	9/7-13	9/14-20	9/21-27	9/28-10/4	10/5-11	10/12-18	10/19-25	10/26-11/1	11/2-8
	1	2	3	4	5	6	7	8	9	10
Swans:										
Whistling									8	20
Trumpeter										
Geese:										
Canada				3	9		90	90	100	100
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other				3	9		90	90	100	100
TOTAL										
Ducks:										
Mallard	750	850	800	800	900	1,120	1,180	1,475	2,110	2,200
Black										
Gadwall						20	30	30	80	60
Baldpate	200	220	220	200	595	660	600	540	480	350
Pintail	40	40	60	70	40	45	85	110	175	150
Green-winged teal	75	125	125	180	205	135	105	75	105	150
Blue-winged teal	200	190	190	90	5	5	5		5	5
Cinnamon teal	150	130	130	60						
Shoveler	90	100	120	90	50	15	15	15	20	20
Wood	130	130	130	100	80	45	30	15	15	15
Redhead	20	20	10	20	10	10	35	15	20	20
Ring-necked	35	35	35	55	55	25	10	5	10	10
Canvasback						1	1			
Scaup				10	10	35	55	55	90	90
Goldeneye	15	10	10	10					15	5
Bufflehead						15	30	15	15	15
Ruddy	40	40	40	50	40	45	45	25	40	40
Other H. merganser	30	30	30	20	10	20	20	20	20	20
TOTAL	1,775	1,920	1,900	1,755	2,000	2,196	2,246	2,395	3,200	3,150
Coot:	850	850	1,640	1,640	1,660	1,550	1,670	1,200	1,240	

3 -1750a

Cont. NR-1

(Rev. March 1953)

# WATERFOWL

(Continuation Sheet)

REFUGE RAVALLIMONTHS OF September TO December, 19 69

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production : Broods: Estimated : seen : total	
	11/9-15	11/16-22	11/23-29	11/30-12/6	12/7-13	12/14-20	12/21-27	12/28-1/3			
Swans:											
Whistling	16	6				1			357		
Trumpeter											
Geese:											
Canada	105	125	125	130	205	220	280	200	12,474		
Cackling											
Brant											
White-fronted							1		7		
Snow											
Blue											
Other TOTAL	105	125	125	130	205	220	281	200	12,481		
Ducks:											
Mallard	2,200	2,300	2,400	2,600	2,500	3,635	4,290	3,250	247,520		
Black											
Gadwall	60	20	35	30	20	20	20	20	3,115		
Baldpate	300	300	200	165	165	165	70	70	38,130		
Pintail	150	75	150	70	70	70	70	50	10,640		
Green-winged teal	175	60	175	175	160	150	100	70	16,415		
Blue-winged teal	5								4,900		
Cinnamon teal									3,290		
Shoveler	20								3,885		
Wood	10								4,900		
Redhead	20	10							1,470		
Ring-necked	10	10		5				3	2,121		
Canvasback		5		1					56		
Scaup	125	10	20	10	10	10	5	5	3,780		
Goldeneye	5	10	25	5	5	5	5	10	945		
Bufflehead	15	10	40	15	5		5	5	1,295		
Ruddy	30	15		1				2	3,171		
Other H. merganser	50	25		5	5	10	10	10	2,345		
A. merganser			5						35		
TOTAL	3,175	2,850	3,050	3,082	2,940	4,055	4,575	3,495	348,313		
Coot:	450	60	30	30	20	5	5	10	94,220		
					(over)						



	(5)	(6)	(7)	SUMMARY
	Total Days Use	Peak Number	Total Production	
Swans	357	20	--	Principal feeding areas Pool 2 prior to hunting season.
Geese	12,481	281	--	pools 8 and 10 after. Light use of tract 20 grain.
Ducks	348,313	4,575	--	Principal nesting areas
Coots	94,220	1,670	--	
				Reported by Howard A. Lipke, Refuge Manager

# INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.
- (2) Weeks of Reporting Period: Estimated average refuge populations.
- (3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.
- (4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (5) Total Days Use: A summary of data recorded under (3).
- (6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) Total Production: A summary of data recorded under (4).

BELOGE BVAITTI

MONTHS OF September 10 December 10 93

Interior Duplicating Section, Washington, D. C.  
1953

(CONTINUATION SHEET)  
M V L E R O M T

CONF\* NE-T  
3-1320w



3-1750b  
Form NR-1B  
(Rev. Nov. 1957)

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
FISH AND WILDLIFE SERVICE  
BUREAU OF SPORT FISHERIES AND WILDLIFE  
WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge Revalli For 12-month period ending August 31, 1969

Reported by Howard A. Lipke Title Refuge Manager

(1)	(2)	(3)	(4)	(5)
Area or Unit	Habitat		Breeding	
Designation	Type Acreage	Use-days	Population	Production
Crops	200	Ducks 326,340	300	1,100
Upland	1,320	Geese 7,770	15	50
Marsh	700	Swans 119		
Water	450	Coots 243,500	100	400
Total	2,670	Total 382,729	415	1,550
Crops		Ducks		
Upland		Geese		
Marsh		Swans		
Water		Coots		
Total		Total		
Crops		Ducks		
Upland		Geese		
Marsh		Swans		
Water		Coots		
Total		Total		
Crops		Ducks		
Upland		Geese		
Marsh		Swans		
Water		Coots		
Total		Total		
Crops		Ducks		
Upland		Geese		
Marsh		Swans		
Water		Coots		
Total		Total		
Crops		Ducks		
Upland		Geese		
Marsh		Swans		
Water		Coots		
Total		Total		
Crops		Ducks		
Upland		Geese		
Marsh		Swans		
Water		Coots		
Total		Total		

(over)

\*Acquisition and development has prevented determination of accurate acreage figures.

## INSTRUCTIONS

All tabulated information should be based on the best available techniques for obtaining these data. Estimates having no foundation in fact must be omitted. Refuge grand totals for all categories should be provided in the spaces below the last unit tabulation. Additional forms should be used if the number of units reported upon exceeds the capacity of one page. This report embraces the preceding 12-month period, NOT the fiscal or calendar year, and is submitted annually with the May-August Narrative Report.

(1) **Area or Unit:** A geographical unit which, because of size, terrain characteristics, habitat type and current or anticipated management practices, may be considered an entity apart from other areas in the refuge census pattern. The combined estimated acreages of all units should equal the total refuge area. A detailed map and accompanying verbal description of the habitat types of each unit should be forwarded with the initial report for each refuge, and thereafter need only be submitted to report changes in unit boundaries or their descriptions.

(2) **Habitat:** Crops include all cultivated croplands such as cereals and green forage, planted food patches and agricultural row crops; upland is all uncultivated terrain lying above the plant communities requiring seasonal submergence or a completely saturated soil condition a part of each year, and includes lands whose temporary flooding facilitates use of non-aquatic type foods; marsh extends from the upland community to, but not including, the water type and consists of the relatively stable marginal or shallow-growing emergent vegetation type, including wet meadow and deep marsh; and in the water category are all other water areas inundated most or all of the growing season and extending from the deeper edge of the marsh zone to strictly open-water, embracing such habitat as shallow playa lakes, deep lakes and reservoirs, true shrub and tree swamps, open flowing water and maritime bays, sounds and estuaries. Acreage estimates for all four types should be computed and kept as accurate as possible through reference to available maps supplemented by periodic field observations. The sum of these estimates should equal the area of the entire unit.

(3) **Use-days:** Use-days is computed by multiplying weekly waterfowl population figures by seven, and should agree with information reported on Form NR-1.

(4) **Breeding Population:** An estimate of the total breeding population of each category of birds for each area or unit.

(5) **Production:** Estimated total number of young raised to flight age.



# WATERFOWL

REFUGE      REVALLI

MONTHS OF MAY THRU 40 AUGUST, 1969

[illegible]



3 -1750a

Cont. NR-1

(Rev. March 1953)

WATERFOWL  
(Continuation Sheet)REFUGE RAVALLIMONTHS OF MAY THRU XX AUGUST, 1969

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production : Broods: Estimated : seen : total	
	7/6-12	7/13-19	7/20-26	7/27-8/2	8/3-9	8/10-16	8/17-23	8/24-30			
Swans:											
Whistling									119		
Trumpeter											
Geese:											
Canada	70	70	70	80	80	80	80	150	7,770	6	50
Cackling											
Brant											
White-fronted											
Snow											
Blue											
<del>Other</del> TOTAL	70	70	70	80	80	80	80	150			
Ducks:											
Mallard	800	800	800	800	800	800	800	800	132,300		450
Black											
Gadwall									4,200		
Baldpate	200	200	200	200	200	200	200	200	39,900		80
Pintail	40	40	40	40	40	40	40	40	8,120		25
Green-winged teal	50	50	50	50	50	100	100	100	10,850		40
Blue-winged teal	200	200	200	200	200	200	200	370	27,440		150
Cinnamon teal	100	100	100	100	100	100	100	150	25,550		80
Shoveler	60	60	60	60	60	80	80	100	13,500		60
Wood	85	85	85	85	110	110	130	130	10,535		80
Redhead	30	30	30	30	30	30	30	30	10,290		15
Ring-necked	50	50	50	50	50	50	50	50	5,250		30
Canvasback	30	30	30	30	30	30	30	20	4,620		20
Scaup									7,700		
Goldeneye							10	15	3,675		
Bufflehead									1,575		
Ruddy	50	40	50	60	60	60	60	60	15,750		40
Other Com. merganser									595		
Hooded merganser	30	30	30	30	30	30	30	30	4,620		30
TOTAL	1,705	1,715	1,725	1,735	1,760	1,830	1,860	1,925	208,340		488
Coot:	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	208,500		

(over)

	(5)	(6)	(7)
	Total Days Use	Peak Number	Total Production
Swans	119	14	
Geese	7,700	150	50
Ducks	326,340	5,545	1,100
Coots	218,500	2,500	400

# SUMMARY

Principal feeding areas All pools, river oxbows;

harvest on pools 2, 5, 6, 8 and 10, and oxbows.

Principal nesting areas Entire refuge.

Reported by Howard A. Lipke, Refuge Manager

Personnel transfers involved 3 staff members in inventories, production estimated.

## INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.
- (2) Weeks of Reporting Period: Estimated average refuge populations.
- (3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.
- (4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (5) Total Days Use: A summary of data recorded under (3).
- (6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C.

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